APPENDIX D

Physical & Geotechnical Laboratory Testing Results, performed by Patriot Engineering and Environmental, Inc., September 2018

Revised 11/11/2015

PATRIOT ENGINEERING and Environmental, Inc.

Engineering Value for Project Success

Consulting Environmental, Geotechnical and Materials Engineers

Moistures

ASTM D2216 X

■ Original
☐ Amended

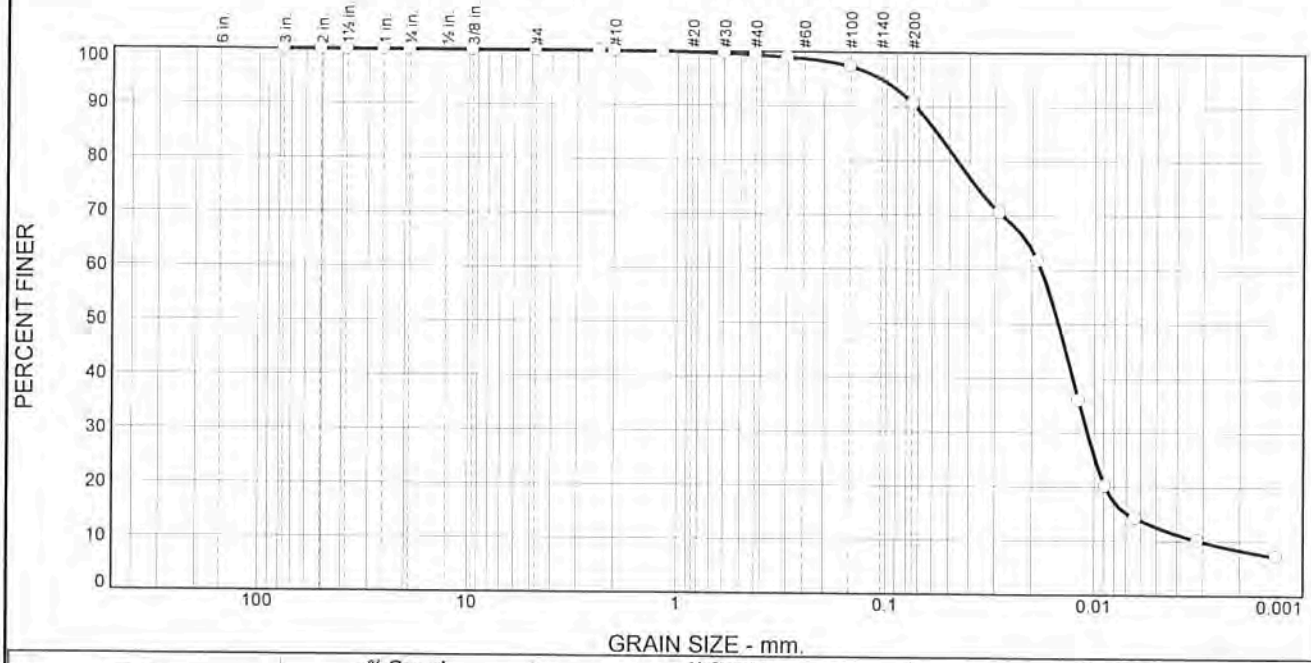
Project: IPL Petersburg CCR Material **Project Number:** 18-1452-03

Client: Haley & Aldrich **Date:** 9/14/18

Sample #	3725	3726	3727	3728	3729		
Location	Scrubber &	Gypsum	Bottom	Conditioned	WWT		
Location	Flyash		Ash	Flyash	Headworks		
Wet Soil & Tare	298.22	311.45	367.59	260.66	362.79		
Dry Soil & Tare	280.61	286.14	309.6	258.26	302.96		
Water Lost	17.61	25.31	57.95	2.4	59.83		
Tare	209.45	209.42	209.33	177.73	176.09		
Dry Soil Weight	71.16	76.72	100.3	80.53	126.9		
Moisture Content	24.75	32.99	57.77	2.98	47.16		

Penetrometer							
Can Number							
Location							
Wet Soil & Tare							
Dry Soil & Tare							
Water Lost							
Tare							
Dry Soil Weight							
Moisture Content							

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.6	8.9	77.9	12.6

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3.0"	100.0		
2.0	100.0		
1.5	100.0		
1.0	100.0		
.75	100.0		
.375	100.0		
#4	100.0		
#8	100.0		
#10	100.0		
#16	99.9		
#30	99.6		
#40	99.4		
#50	99.0		
#100	97.3		
#200	90.5		
0.0286 mm.	70.5		
0.0188 mm.	61.6		
0.0119 mm.	35.9		
0.0088 mm.	20.1		
0.0063 mm.	14.2		
0.0032 mm.	10.1		
0.0013 mm.	7.2		

* (no specification provided)

Material Description

Silt

Atterberg Limits (ASTM D 4318)

PL= NP LL= NV PI= NP

Classification

USCS (D 2487)= ML AASHTO (M 145)= A-4(0)

Coefficients

D_{90}= 0.0729 D_{85}= 0.0569 D_{60}= 0.0181
D_{50}= 0.0149 D_{30}= 0.0108 D_{15}= 0.0069
D_{10}= 0.0031 C_u= 5.84 C_c= 2.09

Remarks

Date Received: **Date Tested:** 9/20/18

Tested By: N. Durkee

Checked By: J. Vieck

Title: Engineer

Location: Scrubber Sludge and Flyash
Sample Number: 3725

Date Sampled:

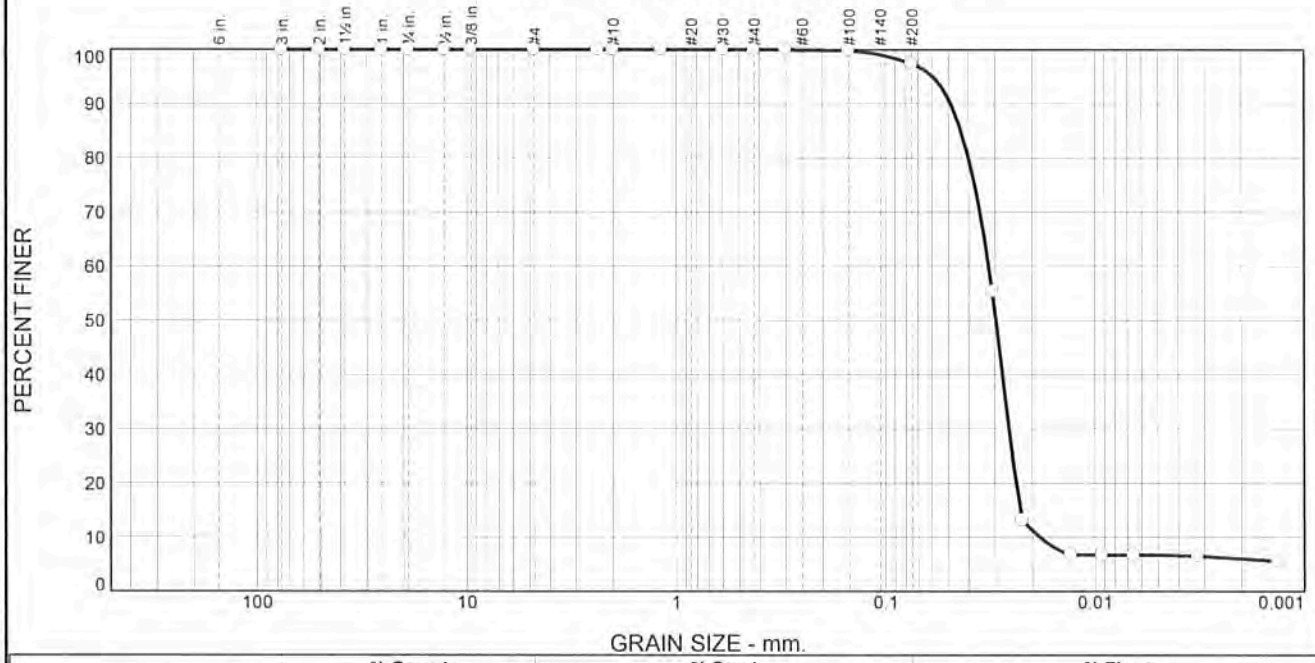
PATRIOT ENGINEERING and Environmental, Inc.

Client: Haley and Aldrich
Project: IPL Petersburg CCR Material

Project No: 18-1452-03C

Figure

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.0	2.6	90.7	6.7

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3.0"	100.0		
2.0	100.0		
1.5	100.0		
1.0	100.0		
.75	100.0		
.50	100.0		
.375	100.0		
#4	100.0		
#8	100.0		
#10	100.0		
#16	100.0		
#30	100.0		
#40	100.0		
#50	100.0		
#100	99.8		
#200	97.4		
0.0309 mm.	55.3		
0.0222 mm.	13.1		
0.0130 mm.	6.8		
0.0092 mm.	6.7		
0.0065 mm.	6.7		
0.0032 mm.	6.5		
0.0013 mm.	5.6		

* (no specification provided)

Material Description

Silt

Atterberg Limits (ASTM D 4318)

PL= NP LL= NV PI= NP

Classification

USCS (D 2487)= ML AASHTO (M 145)= A-4(0)

Coefficients

D_{90}= 0.0487 D_{85}= 0.0435 D_{60}= 0.0321
D_{50}= 0.0297 D_{30}= 0.0257 D_{15}= 0.0226
D_{10}= 0.0184 C_u= 1.75 C_c= 1.12

Remarks

Date Received: **Date Tested:** 9/20/18

Tested By: N. Durkee

Checked By: J. Vieck

Title: Engineer

Location: Gypsum
Sample Number: 3726

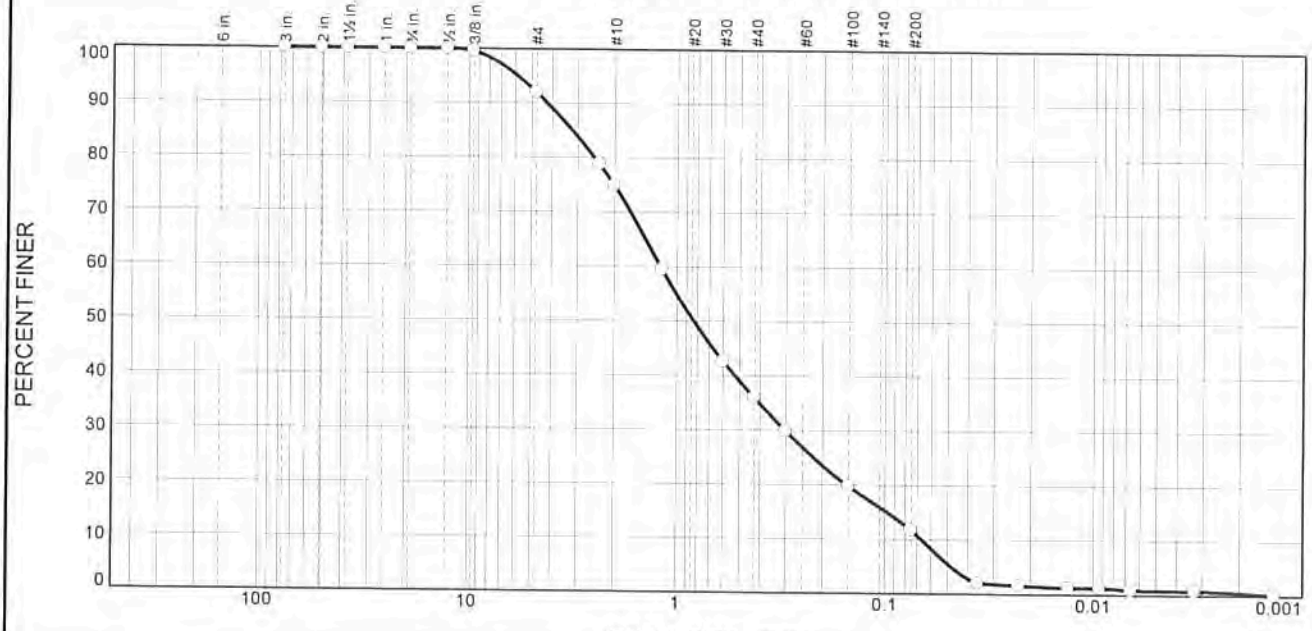
Date Sampled:

PATRIOT ENGINEERING and Environmental, Inc.

Client: Haley and Aldrich
Project: IPL Petersburg CCR Material

Project No: 18-1452-03C **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	8.1	17.0	39.0	24.2	10.9	0.8

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3.0"	100.0		
2.0	100.0		
1.5	100.0		
1.0	100.0		
.75	100.0		
.50	100.0		
.375	99.5		
#4	91.9		
#8	78.8		
#10	74.9		
#16	59.4		
#30	42.6		
#40	35.9		
#50	29.8		
#100	19.7		
#200	11.7		
0.0358 mm.	2.0		
0.0227 mm.	1.6		
0.0131 mm.	1.3		
0.0093 mm.	1.3		
0.0066 mm.	0.9		
0.0033 mm.	0.8		
0.0014 mm.	0.1		

* (no specification provided)

Material Description

Well-graded sand with silt

Atterberg Limits (ASTM D 4318)

PL= NP LL= NV PI= NP

Classification

USCS (D 2487)= SW-SM AASHTO (M 145)= A-1-b

Coefficients

D_{90}= 4.2142 D_{85}= 3.1911 D_{60}= 1.2028
D_{50}= 0.8315 D_{30}= 0.3032 D_{15}= 0.0977
D_{10}= 0.0667 C_u= 18.03 C_c= 1.15

Remarks

Date Received: **Date Tested:** 9/20/18

Tested By: N. Durkee

Checked By: J. Vieck

Title: Engineer

Location: Bottom Ash
Sample Number: 3727

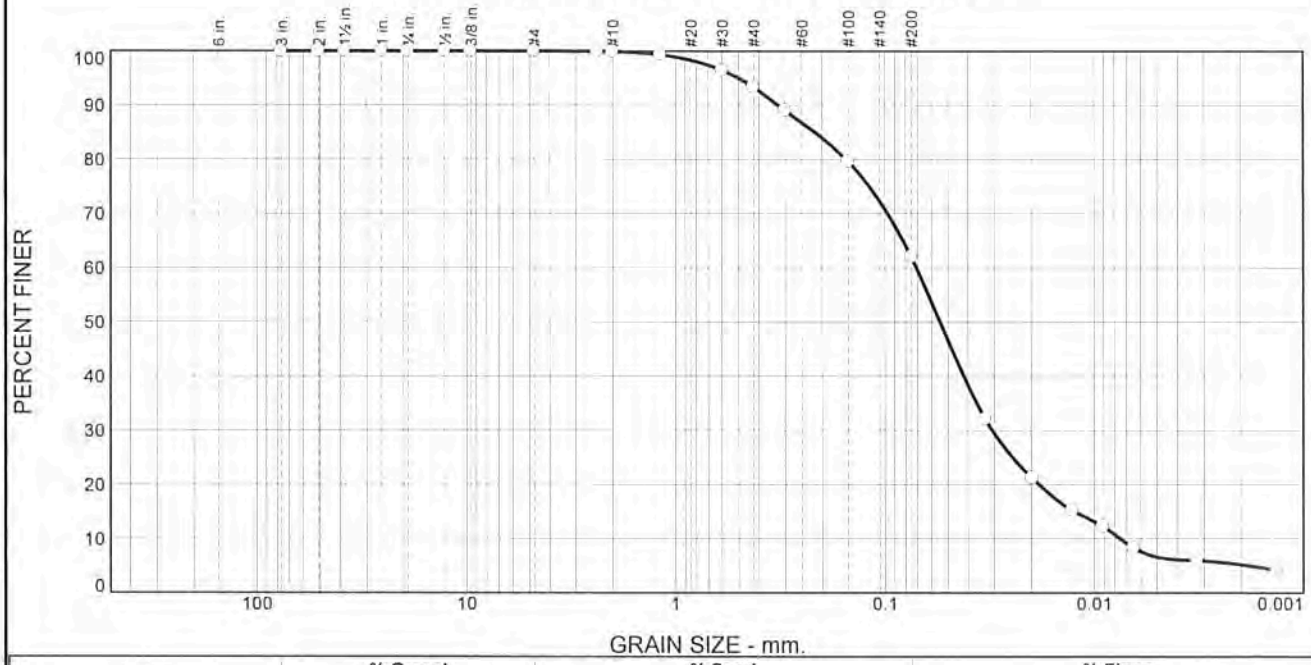
Date Sampled:

PATRIOT ENGINEERING and Environmental, Inc.

Client: Haley and Aldrich
Project: IPL Petersburg CCR Material

Project No: 18-1452-03C **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	6.6	31.3	55.4	6.6

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3.0"	100.0		
2.0	100.0		
1.5	100.0		
1.0	100.0		
.75	100.0		
.50	100.0		
.375	100.0		
#4	100.0		
#8	99.9		
#10	99.9		
#16	99.3		
#30	96.4		
#40	93.3		
#50	89.0		
#100	79.6		
#200	62.0		
0.0331 mm.	32.1		
0.0197 mm.	21.2		
0.0127 mm.	15.2		
0.0091 mm.	12.3		
0.0065 mm.	8.3		
0.0032 mm.	6.0		
0.0013 mm.	4.2		

* (no specification provided)

Material Description

Sandy silt

Atterberg Limits (ASTM D 4318)

PL= NP LL= NV PI= NP

Classification

USCS (D 2487)= ML AASHTO (M 145)= A-4(0)

Coefficients

D_{90}= 0.3239 D_{85}= 0.2164 D_{60}= 0.0709
D_{50}= 0.0545 D_{30}= 0.0306 D_{15}= 0.0124
D_{10}= 0.0075 C_u= 9.43 C_c= 1.76

Remarks

Date Received: **Date Tested:** 9/20/18

Tested By: N. Durkee

Checked By: J. Vieck

Title: Engineer

Location: Conditioned Flyash
Sample Number: 3728

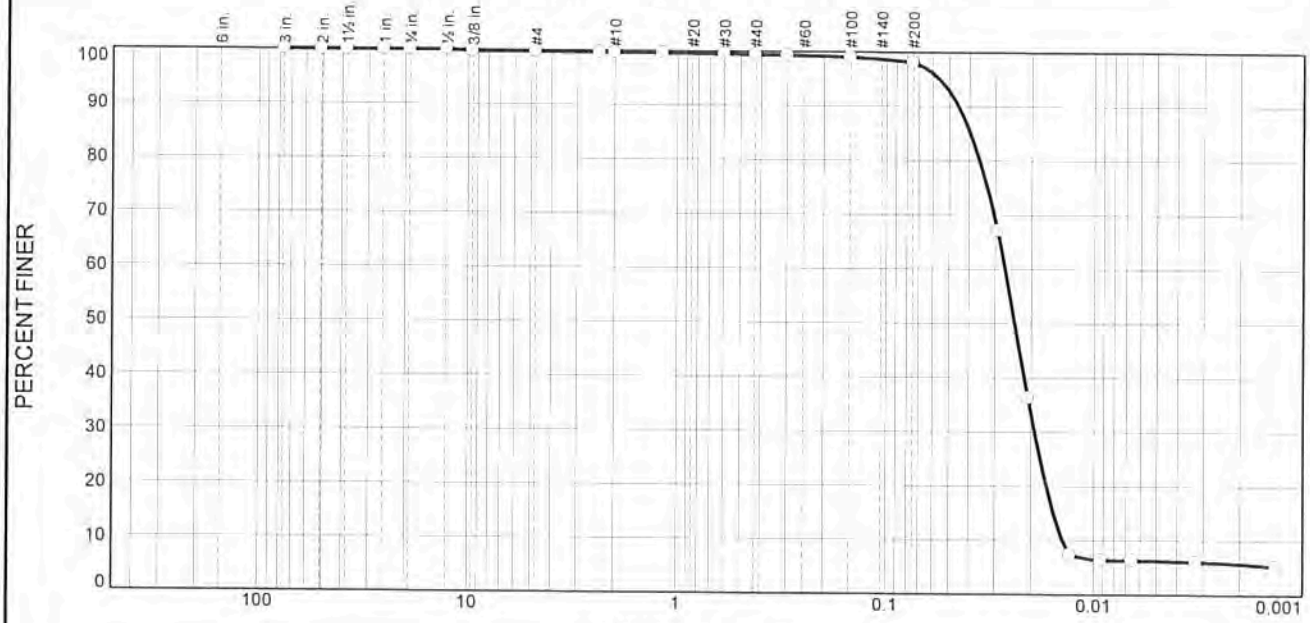
Date Sampled:

PATRIOT ENGINEERING and Environmental, Inc.

Client: Haley and Aldrich
Project: IPL Petersburg CCR Material

Project No: 18-1452-03C **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.3	0.0	0.3	1.3	91.8	6.3

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3.0"	100.0		
2.0	100.0		
1.5	100.0		
1.0	100.0		
.75	100.0		
.50	100.0		
.375	99.8		
#4	99.7		
#8	99.7		
#10	99.7		
#16	99.6		
#30	99.5		
#40	99.4		
#50	99.3		
#100	99.0		
#200	98.1		
0.0292 mm.	67.1		
0.0207 mm.	36.2		
0.0130 mm.	7.3		
0.0092 mm.	6.3		
0.0065 mm.	6.3		
0.0032 mm.	6.1		
0.0013 mm.	5.3		

* (no specification provided)

Material Description

Silt

Atterberg Limits (ASTM D 4318)

PL= NP LL= NV PI= NP

Classification

USCS (D 2487)= ML AASHTO (M 145)= A-4(0)

Coefficients

D_{90}= 0.0451 D_{85}= 0.0395 D_{60}= 0.0268
D_{50}= 0.0240 D_{30}= 0.0192 D_{15}= 0.0156
D_{10}= 0.0141 C_u= 1.90 C_c= 0.98

Remarks

Date Received: **Date Tested:** 9/20/18

Tested By: N. Durkee

Checked By: J. Vieck

Title: Engineer

Location: WWT Headworks
Sample Number: 3629

Date Sampled:

PATRIOT ENGINEERING and Environmental, Inc.

Client: Haley and Aldrich
Project: IPL Petersburg CCR Material

Project No: 18-1452-03C **Figure**

PATRIOT ENGINEERING
and Environmental, Inc.
601 E. Sycamore St.
Evansville, IN 47713
(812) 477-0050 FAX: (812) 477-0094

■ Original
☐ Amended

Project: IPL Petersburg CCR Material
Client: Haley & Aldrich

Project number: 18-1452-03

Date Received: 9/14/2018
Sample Number: see below

Date Tested: 9/20/2018
Sampled by: Contractor

Source:
Tested by: N. Durkee

Sample #	Description	pH
3725	Scrubber Sludge & Flyash	8.87
3726	Gypsum	7.63
3727	Bottom Ash	8.07
3728	Conditioned Flyash	9.06
3729	WWT Headworks	8.03

Revised 4/13/16

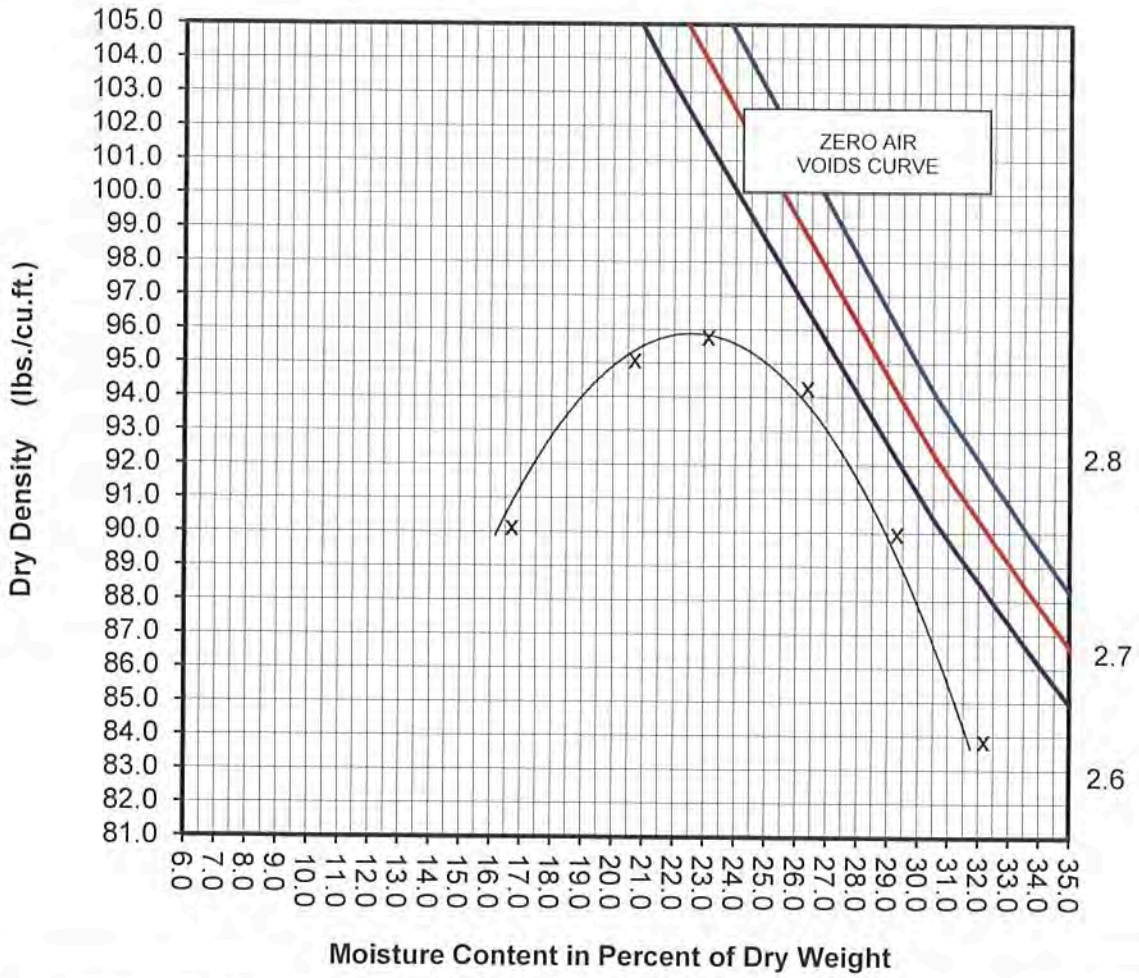
PATRIOT ENGINEERING and Environmental, Inc.
Engineering Value for Project Success
Consulting Environmental, Geotechnical and Materials Engineers

Moisture-Density (Proctor)

ASTM D 698, AASHTO T99 (Standard)
ASTM D 1557, AASHTO T180 (Modified)

■ Original ☐ Amended

Project Name:	IPL Petersburg CCR Material	**Client:**	Haley & Aldrich
Project Number:	18-1452-03		
Date Received:	9/14/2018		
Date Tested:	9/19/2018	**Sampled By:**	Client
Sample Number:	3725	**Tested By:**	LY
Proctor Type:	Standard ASTM D698, AASTHO T99	**Sample Source:**	onsite material



Maximum Dry Density:	95.9 pcf	**Optimum Moisture Content:**	22.5%
Sample Description:	Scrubber sludge and flyash		
Method:	Manual rammer, procedure A		

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Revised 4/13/16

PATRIOT ENGINEERING and Environmental, Inc.

Engineering Value for Project Success

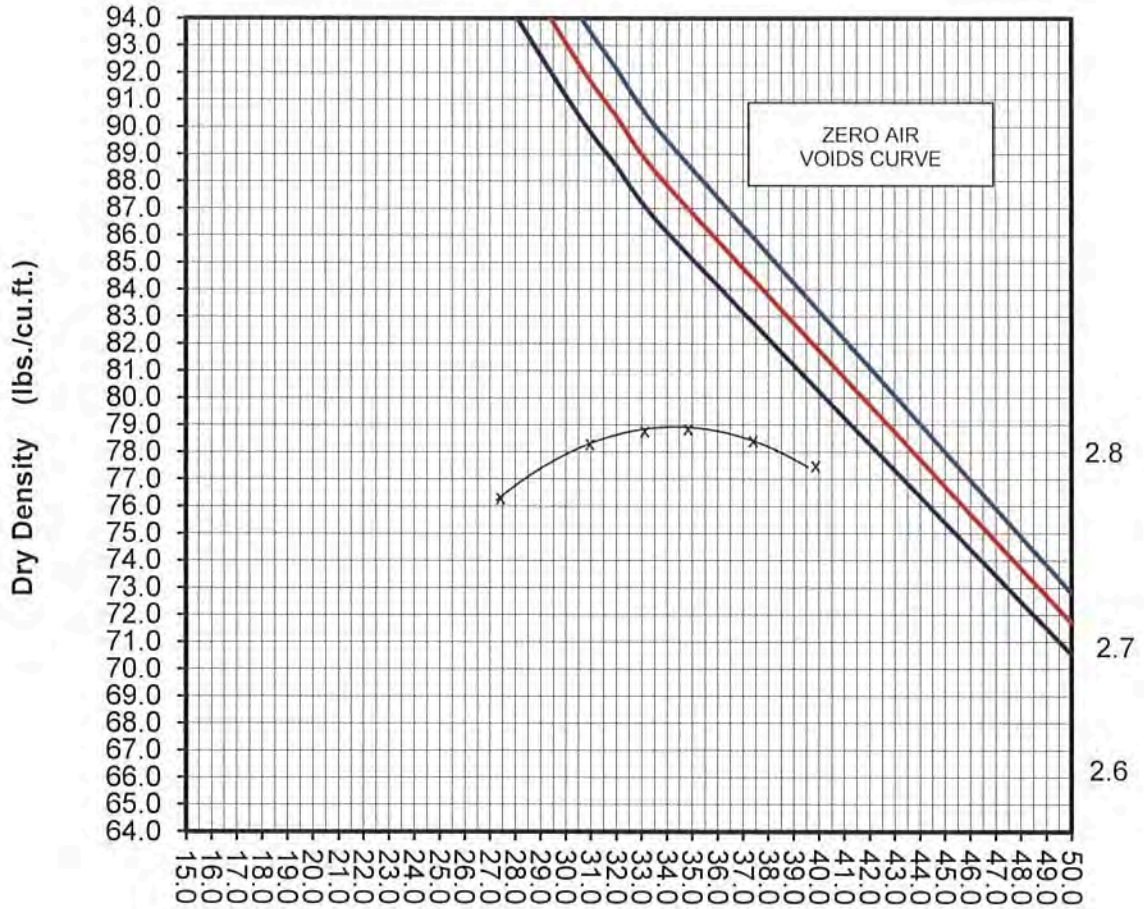
Consulting Environmental, Geotechnical and Materials Engineers

Moisture-Density (Proctor)

ASTM D 698, AASHTO T99 (Standard)
ASTM D 1557, AASHTO T180 (Modified)

■ Original ☐ Amended

Project Name:	IPL Petersburg CCR Material	**Client:**	Haley & Aldrich
Project Number:	18-1452-03		
Date Received:	9/14/2018		
Date Tested:	9/19/2018	**Sampled By:**	Client
Sample Number:	3726	**Tested By:**	ND
Proctor Type:	Standard ASTM D698, AASTHO T99	**Sample Source:**	onsite material



Maximum Dry Density:	79.0 pcf	**Optimum Moisture Content:**	35.0%
Sample Description:	Gypsum		
Method:	Manual rammer, procedure A		

601 E. Sycamore St. Evansville, IN 47711

Revised 4/13/16

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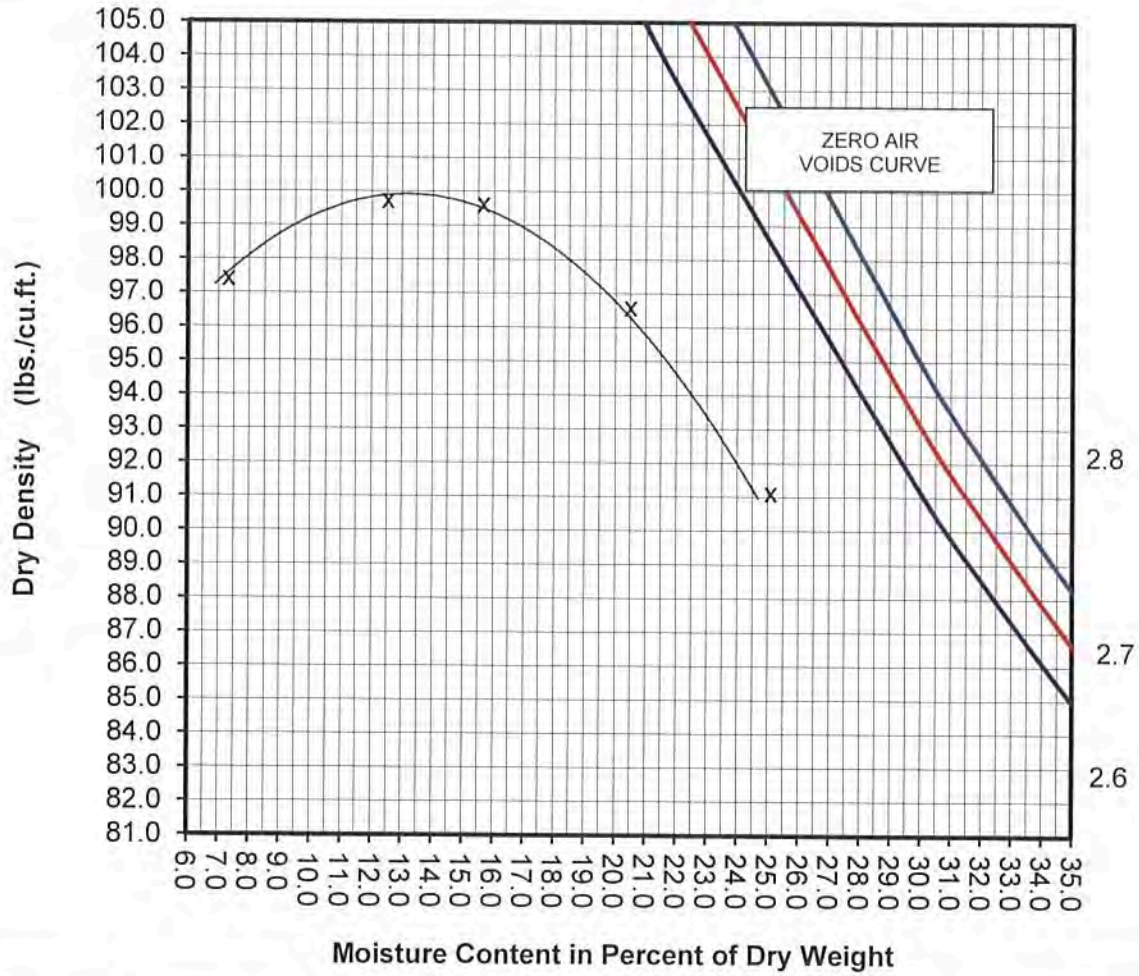
Engineering Value for Project Success
Consulting Environmental, Geotechnical and Materials Engineers

Moisture-Density (Proctor)

ASTM D 698, AASHTO T99 (Standard)
ASTM D 1557, AASHTO T180 (Modified)

■ Original ☐ Amended

Project Name:	IPL Petersburg CCR Material	**Client:**	Haley & Aldrich
Project Number:	18-1452-03		
Date Received:	9/14/2018		
Date Tested:	9/19/2018	**Sampled By:**	Client
Sample Number:	3727	**Tested By:**	LY
Proctor Type:	Standard ASTM D698, AASTHO T99	**Sample Source:**	onsite material



Maximum Dry Density:	99.9 pcf	**Optimum Moisture Content:**	13.0%
Sample Description:	Bottom Ash		
Method:	Manual rammer, procedure A		

601 E. Sycamore St. Evansville, IN 47711

Revised 4/13/16

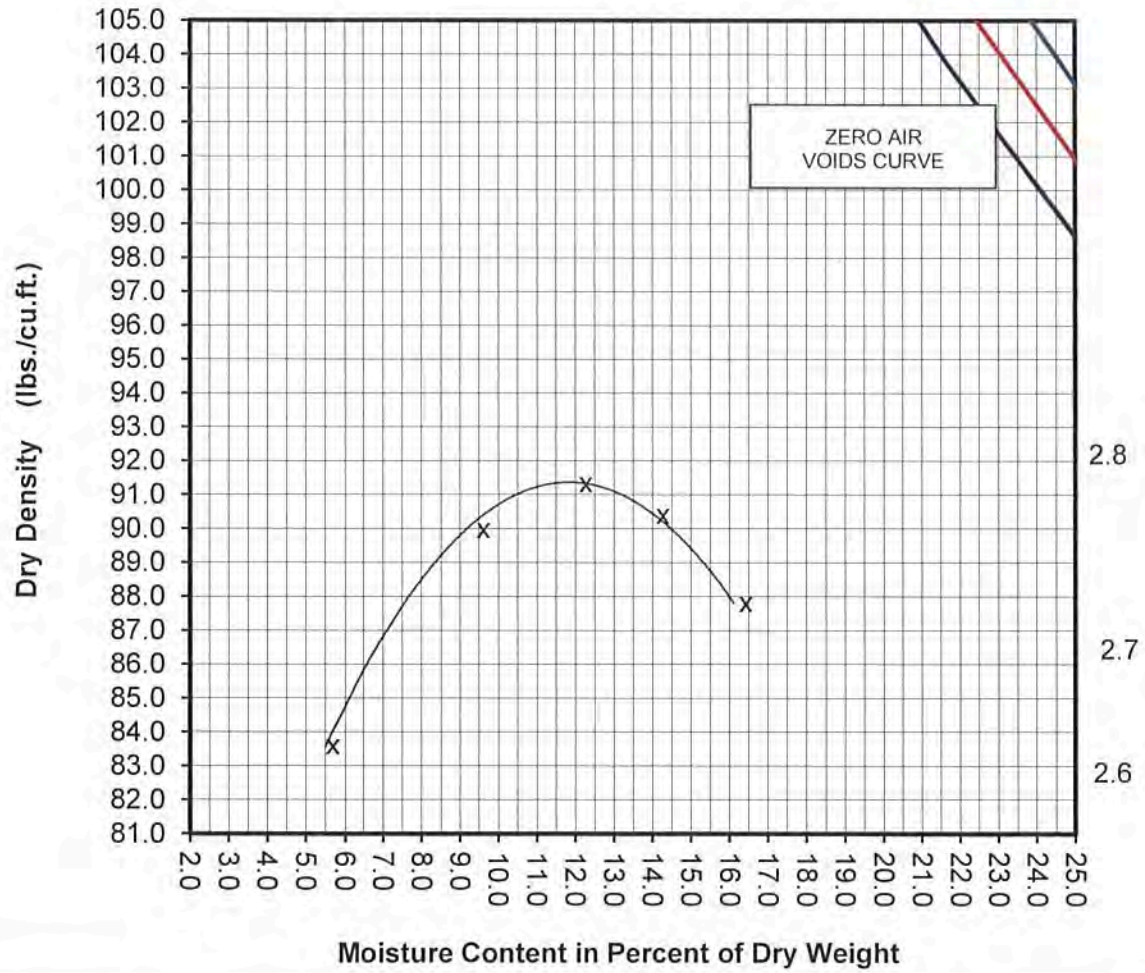
PATRIOT ENGINEERING and Environmental, Inc.
Engineering Value for Project Success
Consulting Environmental, Geotechnical and Materials Engineers

Moisture-Density (Proctor)

ASTM D 698, AASHTO T99 (Standard)
ASTM D 1557, AASHTO T180 (Modified)

■ Original ☐ Amended

Project Name:	IPL Petersburg CCR Material	**Client:**	Haley & Aldrich
Project Number:	18-1452-03		
Date Received:	9/14/2018		
Date Tested:	9/19/2018	**Sampled By:**	Client
Sample Number:	3728	**Tested By:**	LY
Proctor Type:	Standard ASTM D698, AASTHO T99	**Sample Source:**	onsite material



Maximum Dry Density:	91.4 pcf	**Optimum Moisture Content:**	12.0%
Sample Description:	Conditioned Flyash		
Method:	Manual rammer, procedure A		

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Revised 4/13/16

PATRIOT ENGINEERING and Environmental, Inc.

Engineering Value for Project Success

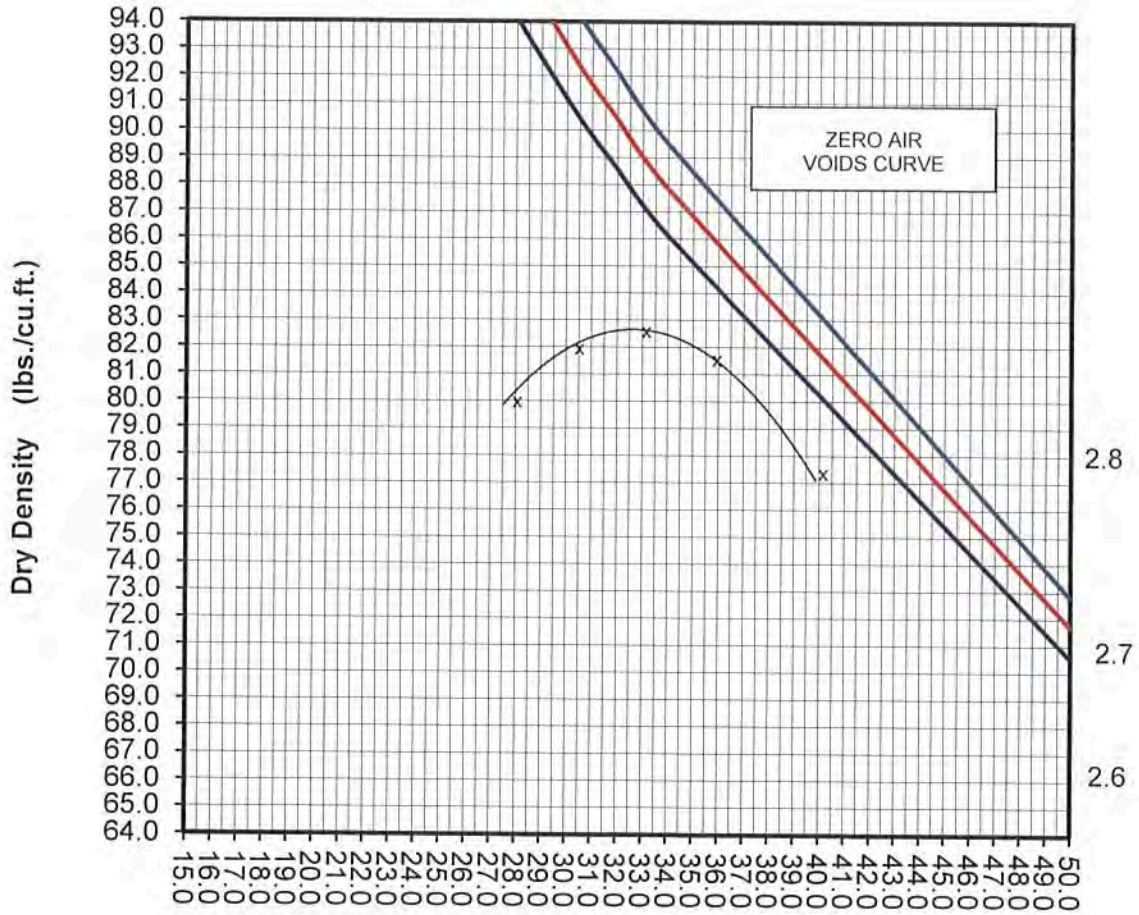
Consulting Environmental, Geotechnical and Materials Engineers

Moisture-Density (Proctor)

ASTM D 698, AASHTO T99 (Standard)
ASTM D 1557, AASHTO T180 (Modified)

■ Original ☐ Amended

Project Name:	IPL Petersburg CCR Material	**Client:**	Haley & Aldrich
Project Number:	18-1452-03		
Date Received:	9/14/2018		
Date Tested:	9/19/2018	**Sampled By:**	Client
Sample Number:	3729	**Tested By:**	ND
Proctor Type:	Standard ASTM D698, AASTHO T99	**Sample Source:**	onsite material



Maximum Dry Density:	82.6 pcf	**Optimum Moisture Content:**	32.5%
Sample Description:	WWT Headworks		
Method:	Manual rammer, procedure A		

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PATRIOT ENGINEERING and Environmental, Inc.
601 E. Sycamore St.
Evansville, IN 47713
(812) 477-0050 Fax (812) 477-0094

Site Photos

Project Name: IPL Petersburg CCR Material
Client: Haley & Aldrich
Contractor: AES
Weather:

Patriot Rep: Brian Crase
Patriot Job Number: 18-1452-03C
Date: 9/27/2018

Remarks:
WWT Headworks. Test performed on 9-27-18. Sample taken on 9-14-18. Approximately 34 degrees.

Remarks:

Remarks

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Evansville, IN 47713
(812) 477-0050 Fax (812) 477-0094

Site Photos

Project Name: IPL Petersburg CCR Material
Client: Haley & Aldrich
Contractor: AES
Weather:

Patriot Rep: Brian Crase
Patriot Job Number: 18-1452-03C
Date: 9/27/2018

Remarks:
Scrubber Sludge and Flyash.
Test performed on 9-27-18.
Sample taken on 9-14-18.
Approximately 36 degrees.

Remarks:

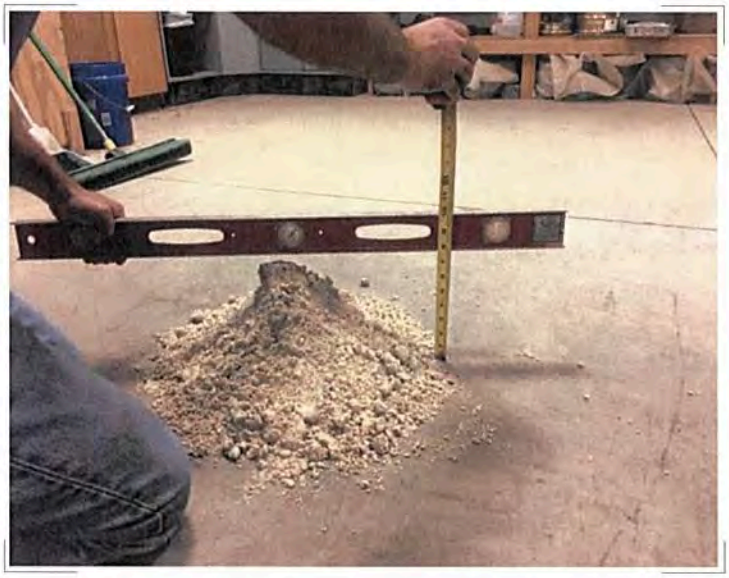
Remarks

PATRIOT ENGINEERING and Environmental, Inc.
601 E. Sycamore St.
Evansville, IN 47713
(812) 477-0050 Fax (812) 477-0094

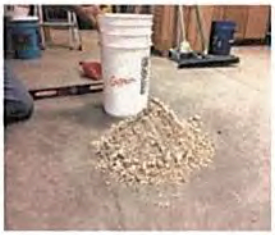
Site Photos

Project Name: IPL Petersburg CCR Material
Client: Haley & Aldrich
Contractor: AES
Weather:

Patriot Rep: Brian Crase
Patriot Job Number: 18-1452-03C
Date: 9/27/2018



Remarks:
Gypsum. Test performed on 9-27-18. Sample taken on 9-14-18. Approximately 39.5 degrees.



Remarks:

Remarks

PATRIOT ENGINEERING and Environmental, Inc.
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Evansville, IN 47713
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Site Photos

Project Name: IPL Petersburg CCR Material
Client: Haley & Aldrich
Contractor: AES
Weather:

Patriot Rep: Brian Crase
Patriot Job Number: 18-1452-03C
Date: 9/27/2018

Remarks:

Conditioned Flyash. Test performed on 9-27-18. Sample taken on 9-14-18. Approximately 36 degrees.

Remarks:

Remarks

PATRIOT ENGINEERING and Environmental, Inc.
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Evansville, IN 47713
(812) 477-0050 Fax (812) 477-0094

Site Photos

Project Name: IPL Petersburg CCR Material
Client: Haley & Aldrich
Contractor: AES
Weather:

Patriot Rep: Brian Crase
Patriot Job Number: 18-1452-03C
Date: 9/27/2018

Remarks:

Bottom Ash. Test performed on 9-27-18. Sample taken on 9-14-18. Approximately 39.5 degrees.

Remarks:

Remarks

APPENDIX E

American Coal Ash Association (ACAA) 2016 Coal Combustion Product (CCP) Production & Use Survey Report

November 2018

HALEY ALDRICH

American Coal Ash Association
38800 Country Club Drive
Farmington Hills, MI 48331
Email: info@acaa-usa.org
Phone: 720-870-7897
Fax: 720-870-7889
Internet: www.ACAA-USA.org

2016 Coal Combustion Product (CCP) Production & Use Survey Report

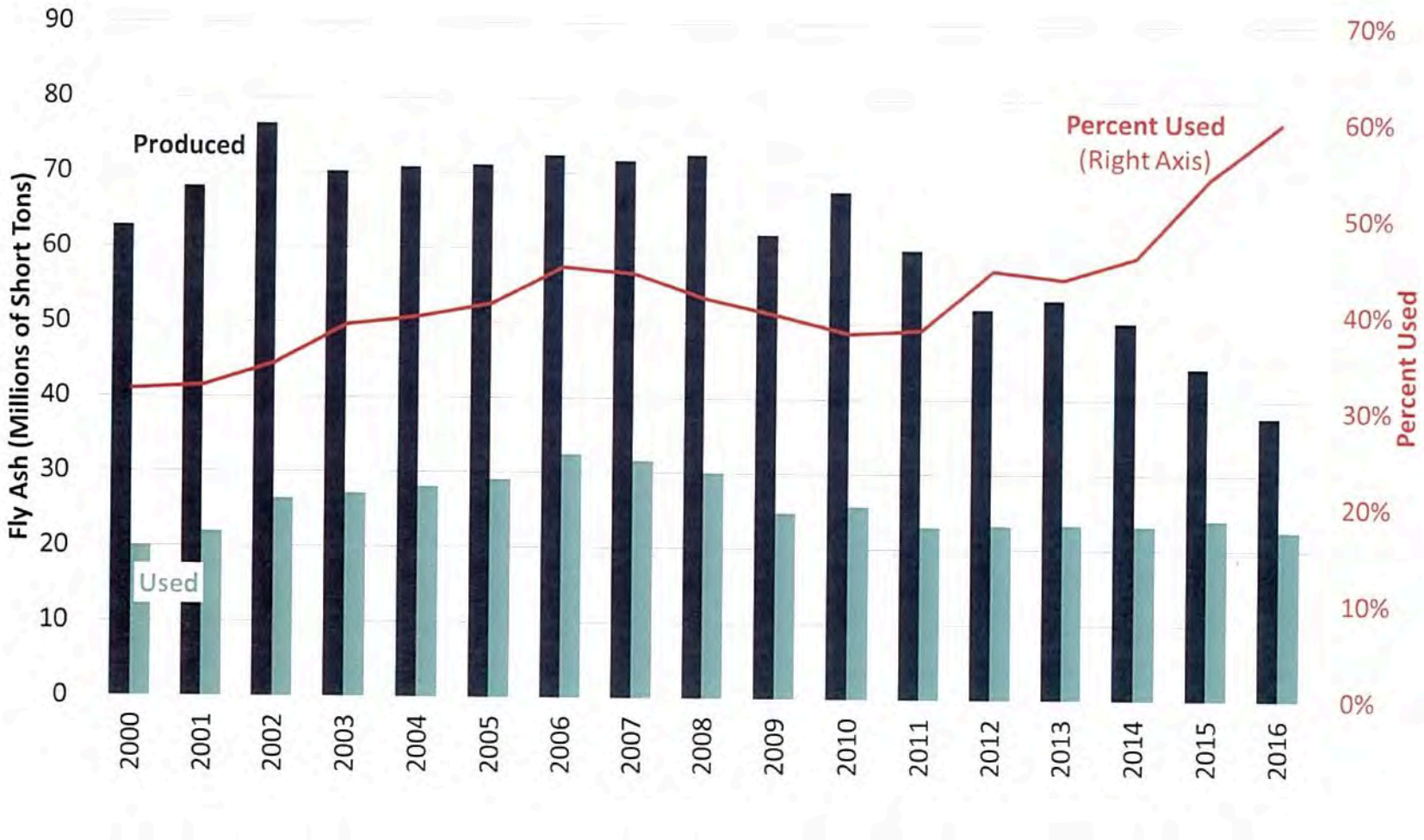
Beneficial Utilization versus Production Totals (Short Tons)

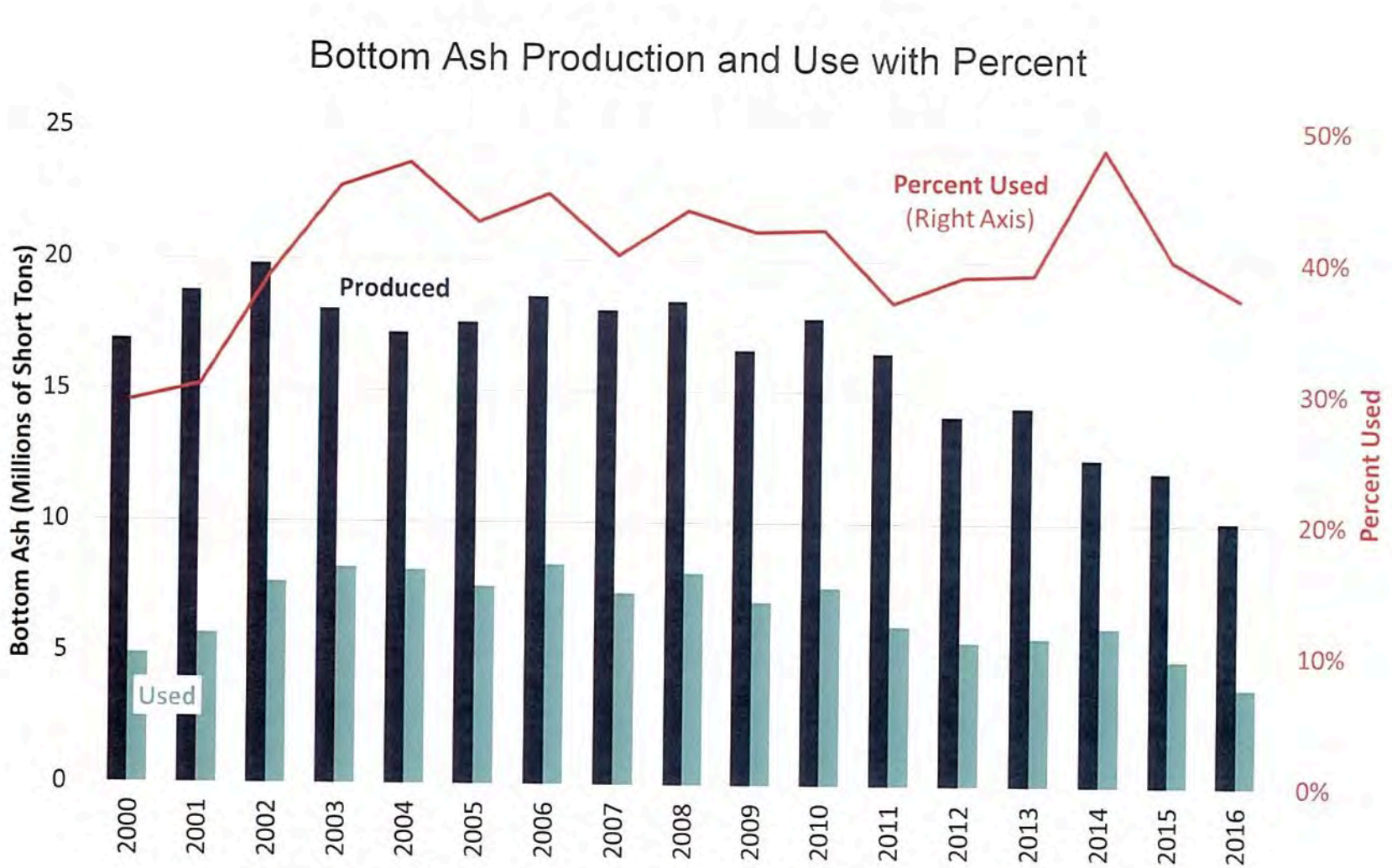
2016 CCP Categories	Fly Ash	Bottom Ash	Boiler Slag	FGD Gypsum	FGD Material Wet Scrubbers	FGD Material Dry Scrubbers	FGD Other	FBC Ash	CCP Production / Utilization Totals
Total CCPs Produced by Category	37,817,327	10,135,360	2,188,298	32,006,516	9,556,694	1,448,752	7,508	14,267,412	107,427,866
Total CCPs Used by Category	22,634,497	3,775,480	1,310,959	18,372,663	896,141	310,607	0	12,869,437	60,169,785
1. Concrete/Concrete Products /Grout	14,362,891	504,416	0	468,748	0	0	0	0	15,336,056
2. Blended Cement/ Feed for Clinker	2,680,712	1,015,756	34,867	1,009,259	0	51,704	0	0	4,792,299
3. Flowable Fill	83,947	0	0	0	0	0	0	0	83,947
4. Structural Fills/Embankments	1,696,296	745,213	0	1,490,267	896,141	0	0	0	4,827,917
5. Road Base/Sub-base	472,609	245,569	0	0	0	0	0	0	718,178
6. Soil Modification/Stabilization	433,189	42,884	0	1,495	0	0	0	0	477,568
7. Mineral Filler in Asphalt	40,969	0	10,592	0	0	8,912	0	0	60,472
8. Snow and Ice Control	0	343,237	12,364	0	0	0	0	0	355,601
9. Blasting Grit/Roofing Granules	0	18,042	1,253,136	0	0	0	0	0	1,271,178
10. Mining Applications	1,043,002	211,670	0	794,133	0	131,738	0	12,729,673	14,910,215
11. Gypsum Panel Products (formerly Wallboard)	0	0	0	9,919,177	0	0	0	0	9,919,177
12. Waste Stabilization/Solidification	767,895	318,516	0	3,632,056	0	109,244	0	139,765	4,967,476
13. Agriculture	2,679	3,789	0	770,573	0	1,106	0	0	778,147
14. Aggregate	0	206,100	0	0	0	0	0	0	206,100
15. Oil/Gas Field Services	190,247	0	0	0	0	7,904	0	0	198,150
16. CCR Pond Closure Activities	254,521	3,142	0	177,013	0	0	0	0	434,675
17. Miscellaneous/Other	605,541	117,148	0	109,941	0	0	0	0	832,630

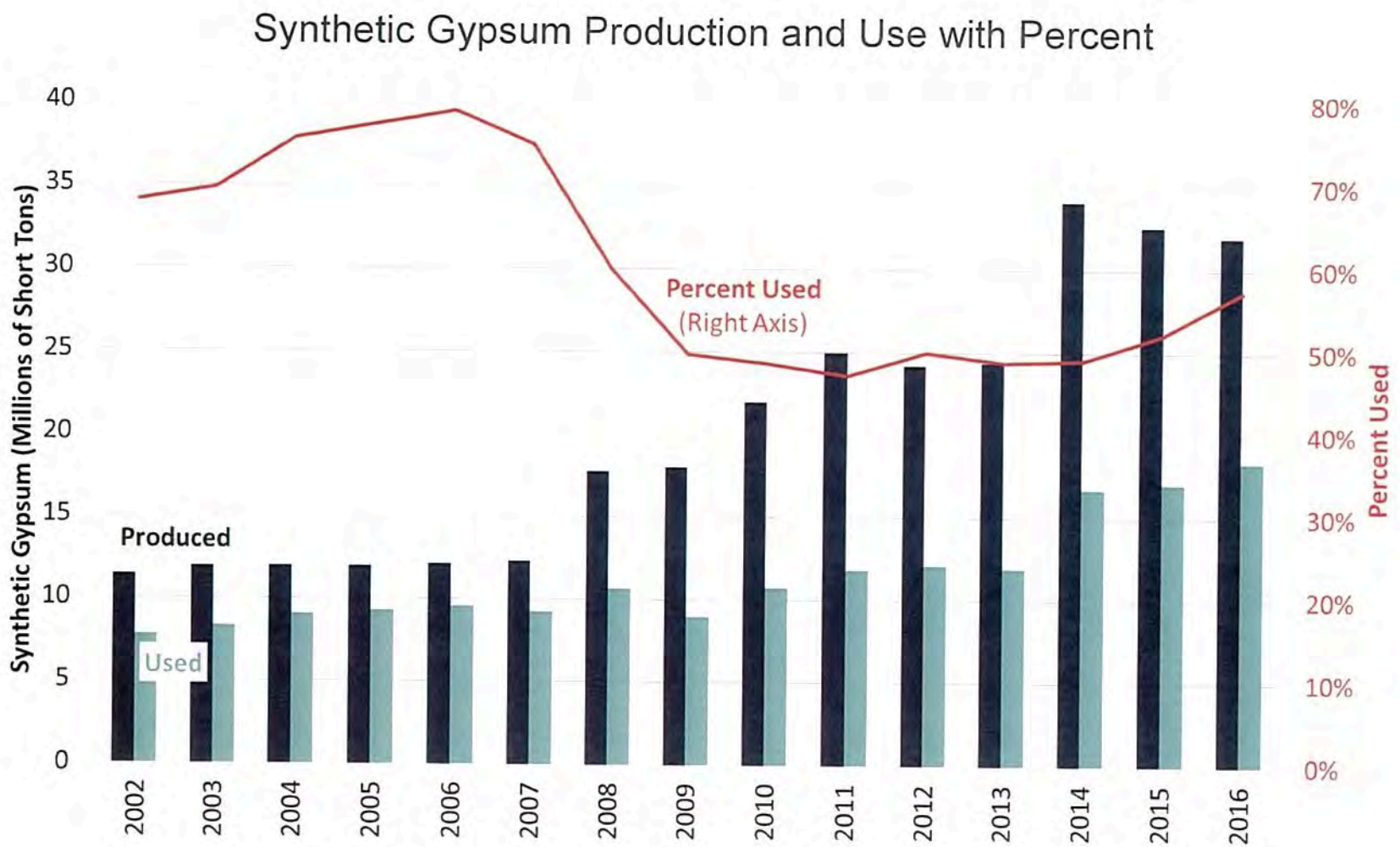
Summary Utilization to Production Rate

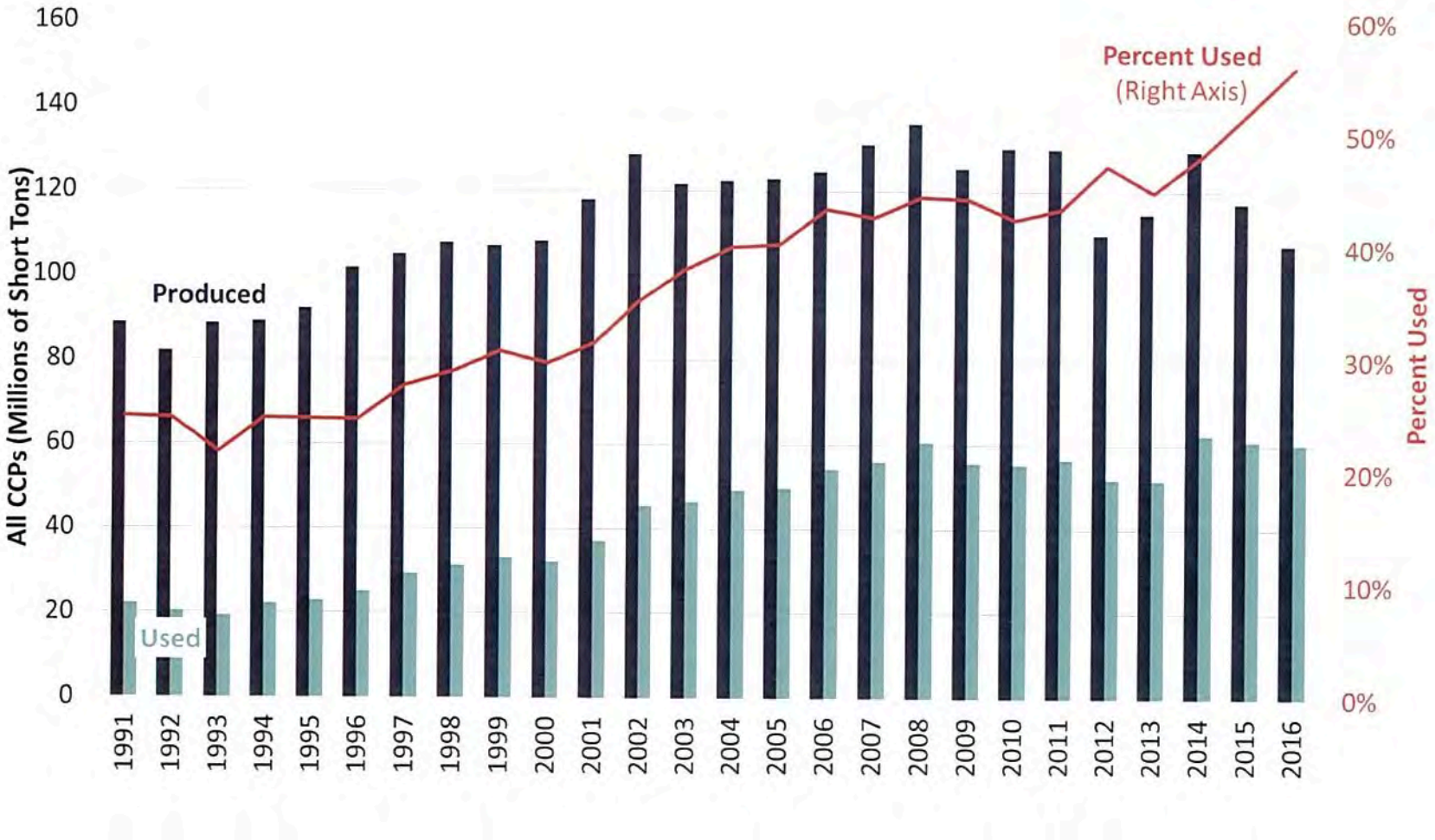
CCP Categories	Fly Ash	Bottom Ash	Boiler Slag	FGD Gypsum	FGD Material Wet Scrubbers	FGD Material Dry Scrubbers	FGD Other	FBC Ash	CCP Utilization Total
Totals by CCP Type/Application	22,634,497	3,775,480	1,310,959	18,372,663	896,141	310,607	0	12,869,437	60,169,785
Category Use to Production Rate (%)	59.85%	37.25%	59.91%	57.40%	9.38%	21.44%	0.00%	90.20%	56.01%
2016 Cenospheres Sold (Pounds)	0	Data in this survey represents 134.31852 GWs of Name Plate rating of the total industry wide approximate 272 GW capacity based on EIA's July 2017 Electric Power Monthly.							
CCPs Imported in 2016 (Short Tons)	0								
CCPs Exported in 2016 (Short Tons)	0								

Fly Ash Production and Use with Percent




Bottom Ash Production and Use with Percent
Bottom Ash (Millions of Short Tons)
25
20
15
10
5
0
50%
40%
30%
20%
10%
0%
Percent Used
Percent Used
(Right Axis)
Produced
Used
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016


Synthetic Gypsum Production and Use with Percent
Synthetic Gypsum (Millions of Short Tons)
Percent Used
Percent Used
(Right Axis)
Produced
Used
0
5
10
15
20
25
30
35
40
0%
10%
20%
30%
40%
50%
60%
70%
80%
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016


All CCPs Production and Use with Percent
All CCPs (Millions of Short Tons)
160
140
120
100
80
60
40
20
0
Produced
Used
Percent Used
(Right Axis)
60%
50%
40%
30%
20%
10%
0%
Percent Used
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016

APPENDIX F

CCR Materials Screening Analysis Results

TABLE 1
LEACHATE SAMPLE RESULTS
CCR BENEFICIAL USE ASSESSMENT
AES/IPL PETERSBURG
PETERSBURG, INDIANA

Constituent	Units	Bottom Ash 18 hr 01/09/2018 50188189007	Bottom Ash 18 hr 10/03/2017 50181275007	Bottom Ash 18 hr 04/04/2018 50193927007	Bottom Ash 18 hr 07/11/2018 50201164003	Bottom Ash 30 Day 01/09/2018 50188189008	Bottom Ash 30 Day 04/04/2018 50193927008	Bottom Ash 30 Day 07/11/2018 50201164004	Bottom Ash 30 day 10/03/2017 50181275008
Inorganic Compounds									
Aluminum	mg/L	0.2 U	0.42	0.42	0.77	0.2 U	2.2	0.31	0.31
Antimony	mg/L				0.006 U			0.008 U	
Arsenic	mg/L	0.01 U	0.025	0.01 U	0.016	0.01 U	0.013	0.01 U	0.01 U
Barium	mg/L	0.01	0.023	0.027	0.01 U	0.025	0.038	0.01 U	0.024
Boron	mg/L	0.38	0.45	1.5	0.1 U	0.66	1.7	0.22	0.77
Cadmium	mg/L	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Chromium	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Cobalt	mg/L				0.01 U			0.01 U	
Copper	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Iron	mg/L	0.29	0.1 U	0.1 U	0.12	0.41	3.6	0.33	0.65
Lead	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Magnesium	mg/L	1.3	2.5	4.2	1 U	2.8	6.9	1.2	4.4
Manganese	mg/L	0.012	0.01 U	0.048	0.01 U	0.053	0.021	0.012	0.034
Mercury	mg/L	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Molybdenum	mg/L	0.01 U	0.01 U	0.03	0.01 U	0.022	0.042	0.016	0.013
Nickel	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.021	0.01 U	0.01 U	0.01 U
Potassium	mg/L	1 U	1 U	1 U	1 U	1.9	2.9	2.4	2.5
Selenium	mg/L	0.01 U	0.01 U	0.01	0.01 U	0.01 U	0.017	0.01 U	0.01 U
Silver	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Sodium	mg/L	1 U	1.1	10.4	1.3	1 U	11.7	2.1	2.2
Thallium	mg/L				0.01 U			0.01 U	
Vanadium	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.011	0.01 U	0.01 U
Zinc	mg/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Other									
Acidity, Total	mg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Alkalinity, Total as CaCO3	mg/L	8.6	11.6	10.1	15.8	21.2	22.7	14.1	25.7
Chloride	mg/L	1 U	1.8	3.4	1 U	1 U	4.1	1 U	2.2
Fluoride	mg/L	0.53	0.32	3.3	0.1 U	4	4	0.1 U	0.4
pH at 25 Degrees C	Std. Units	7.6	8.4	7.9	9	7.1	7.7	7.2	7.8
Sulfate	mg/L	46.1	289	1810	20.1	75.9	1830	39.6	181
Sulfide	mg/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Total Dissolved Solids	mg/L	88	435	2210	24	144	2270	70	270
Total Organic Carbon	mg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Initial pH	Std. Units	6.9							
Final pH	Std. Units	6.9	7.93	7.21	8.52	7.41	8.17	7.08	7.57

TABLE 1
LEACHATE SAMPLE RESULTS
CCR BENEFICIAL USE ASSESSMENT
AES/IPL PETERSBURG
PETERSBURG, INDIANA

Constituent	Units	Filter Cake (IUCS) 18 hr 07/11/2018 50201164011	Filter Cake (IUCS) 30 Day 07/11/2018 50201164012	Filter Cake 18 hr 01/09/2018 50188189015	Filter Cake 18 hr 10/03/2017 50181275015	Filter Cake 18 hr 04/04/2018 50193927015	Filter Cake 30 Day 01/09/2018 50188189016	Filter Cake 30 Day 04/04/2018 50193927016	Filter Cake 30 day 10/03/2017 50181275016
Inorganic Compounds									
Aluminum	mg/L	0.38	0.48	0.48	0.49	0.43	0.56	0.69	0.7
Antimony	mg/L	0.03	0.032						
Arsenic	mg/L	0.21	0.27	0.29	0.14	0.29	0.42	0.39	0.29
Barium	mg/L	0.058	0.079	0.054	0.078	0.071	0.069	0.11	0.1
Boron	mg/L	13.9	14.5	11	10.9	11.7	11.5	12.6	11.7
Cadmium	mg/L	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Chromium	mg/L	0.01 U	0.01 U	0.011	0.01 U	0.015	0.01 U	0.014	0.01 U
Cobalt	mg/L	0.01 U	0.01 U						
Copper	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Iron	mg/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.17
Lead	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Magnesium	mg/L	13.2	15.2	5.7	8	8.9	12.8	9.8	9
Manganese	mg/L	0.01 U	0.011	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.011
Mercury	mg/L	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Molybdenum	mg/L	0.85	0.85	0.87	0.6	0.95	0.73	0.96	0.63
Nickel	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Potassium	mg/L	7	7.1	7.7	8.8	6.9	6.9	7.4	9.4
Selenium	mg/L	0.34	0.3	0.3	0.23	0.29	0.27	0.29	0.2
Silver	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Sodium	mg/L	277	256	317	269	282	272	285	277
Thallium	mg/L	0.01 U	0.01 U						
Vanadium	mg/L	0.13	0.17	0.13	0.049	0.13	0.17	0.23	0.12
Zinc	mg/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Other									
Acidity, Total	mg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Alkalinity, Total as CaCO3	mg/L	74.2	63.7	72.5	63.6	87	77.5	81.3	67
Chloride	mg/L	160	141	121	137	133	120	135	133
Fluoride	mg/L	0.9	1.2	1.3	1.5	1.2	1.8	1.7	2.3
pH at 25 Degrees C	Std. Units	9.1	8.9	9.4	9.1	9.2	9.1	9.2	9.1
Sulfate	mg/L	870	868	1650	1690	1500	1540	1810	2000
Sulfide	mg/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Total Dissolved Solids	mg/L	2320	2870	2570	3000	1930	2840	2720	3070
Total Organic Carbon	mg/L	1 U	1 U	1.3	1 U	1.3	1 U	1 U	1 U
Initial pH	Std. Units			9.39					
Final pH	Std. Units	8.67	8.68	9.39	9.02	9.25	9.14	9.18	9

TABLE 1
LEACHATE SAMPLE RESULTS
CCR BENEFICIAL USE ASSESSMENT
AES/IPL PETERSBURG
PETERSBURG, INDIANA

Constituent	Units	Fly Ash 18 hr 01/09/2018 50188189019	Fly Ash 18 hr 10/03/2017 50181275019	Fly Ash 18 hr 04/04/2018 50193927019	Fly Ash 18 hr 07/11/2018 50201164015	Fly Ash 30 Day 01/09/2018 50188189020	Fly Ash 30 Day 04/04/2018 50193927020	Fly Ash 30 Day 07/11/2018 50201164016	Fly Ash 30 day 10/03/2017 50181275020
Inorganic Compounds									
Aluminum	mg/L	5	5.8	3.3	1.1	5.5	8.9	1	6.3
Antimony	mg/L				0.021			0.035	
Arsenic	mg/L	1.6	1.9	1.6	0.49	2	2.1	0.7	2.2
Barium	mg/L	0.01 U	0.012	0.01 U	0.02	0.016	0.036	0.035	0.014
Boron	mg/L	11.3	9.8	8.5	24.1	12.7	8.6	24	11.3
Cadmium	mg/L	0.01 U	0.002 U	0.0046	0.002 U	0.01 U	0.0024	0.0021	0.002 U
Chromium	mg/L	0.021	0.025	0.023	0.01 U	0.031	0.034	0.012	0.034
Cobalt	mg/L				0.01 U			0.01 U	
Copper	mg/L	0.01 U	0.01 U	0.01 U	0.015	0.01 U	0.011	0.01 U	0.01 U
Iron	mg/L	0.1 U	0.1	0.1 U	0.1 U	0.1 U	3.6	0.1 U	0.1 U
Lead	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.023	0.01 U	0.01 U
Magnesium	mg/L	1	1 U	1 U	25.1	1 U	1.1	22.7	1 U
Manganese	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Mercury	mg/L	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Molybdenum	mg/L	1.4	1.3	1	0.62	1.4	0.99	0.78	1.4
Nickel	mg/L	0.02	0.02	0.014	0.026	0.02	0.029	0.03	0.022
Potassium	mg/L	13.3	12.2	13.5	14.8	14.9	14.4	15.5	13
Selenium	mg/L	0.62	0.64	0.51	0.4	0.65	0.49	0.42	0.69
Silver	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Sodium	mg/L	990	949	724	618	949	627	568	955
Thallium	mg/L				0.01 U			0.01 U	
Vanadium	mg/L	0.38	0.42	0.29	0.12	0.59	0.46	0.22	0.62
Zinc	mg/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.048	0.02 U	0.02 U
Other									
Acidity, Total	mg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Alkalinity, Total as CaCO3	mg/L	246	290	115	86.3	216	120	91.2	247
Chloride	mg/L	265	254	176	309	277	155	293	254
Fluoride	mg/L	1.7	1.7	1.1	1.3	2	0.97	1.6	1.7
pH at 25 Degrees C	Std. Units	10.5	10.6	9.8	9.2	10.4	9.8	9.2	10.6
Sulfate	mg/L	1420	1630	1640	826	1410	1450	719	1610
Sulfide	mg/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Total Dissolved Solids	mg/L	3140	3020	2120	2290	3020	1870	2150	3060
Total Organic Carbon	mg/L	1.3	3.5	2.7	1.5	1	2.2	1.1	3.4
Initial pH	Std. Units	10.44							
Final pH	Std. Units	10.44	10.67	9.89	8.84	10.54	9.91	9	10.66

TABLE 1
LEACHATE SAMPLE RESULTS
CCR BENEFICIAL USE ASSESSMENT
AES/IPL PETERSBURG
PETERSBURG, INDIANA

Constituent	Units	Gypsum 18 hr 01/09/2018 50188189011	Gypsum 18 hr 10/03/2017 50181275011	Gypsum 18 hr 04/04/2018 50193927011	Gypsum 18 hr 07/11/2018 50201164007	Gypsum 30 Day 01/09/2018 50188189012	Gypsum 30 Day 04/04/2018 50193927012	Gypsum 30 Day 07/11/2018 50201164008	Gypsum 30 day 10/03/2017 50181275012
Inorganic Compounds									
Aluminum	mg/L	0.33	0.26	0.41	0.42	0.2 U	0.2 U	0.24	0.2 U
Antimony	mg/L				0.008 U			0.008 U	
Arsenic	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Barium	mg/L	0.026	0.025	0.027	0.024	0.024	0.023	0.022	0.021
Boron	mg/L	1.7	0.66	2.8	1.1	2.2	2.8	1.3	0.76
Cadmium	mg/L	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Chromium	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Cobalt	mg/L				0.01 U			0.01 U	
Copper	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Iron	mg/L	0.1 U	0.16	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Lead	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Magnesium	mg/L	11.9	3.9	16	8.2	16	16.5	9.6	5.1
Manganese	mg/L	0.029	0.01 U	0.13	0.03	0.01 U	0.11	0.01 U	0.01 U
Mercury	mg/L	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Molybdenum	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.012	0.01 U	0.01 U	0.01 U
Nickel	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Potassium	mg/L	1 U	1 U	1 U	1 U	1.1	1 U	1 U	1 U
Selenium	mg/L	0.015	0.015	0.012	0.017	0.02	0.012	0.022	0.019
Silver	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Sodium	mg/L	5.6	1.6	2.4	3	7.6	2.4	3.2	2.9
Thallium	mg/L				0.01 U			0.01 U	
Vanadium	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Zinc	mg/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Other									
Acidity, Total	mg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Alkalinity, Total as CaCO3	mg/L	15.3	7.2	10.3	7.8	16.8	13.6	9.6	10.2
Chloride	mg/L	6.1	2.9	12.4	5	7.2	11.4	5.1	3.1
Fluoride	mg/L	0.58	3.6	5.5	3.2	5	6.4	4.2	4.3
pH at 25 Degrees C	Std. Units	8	7.9	7.8	8.1	7.5	6.5	8	8
Sulfate	mg/L	1520	1530	1800	905	1740	1840	751	1550
Sulfide	mg/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Total Dissolved Solids	mg/L	2280	2170	2170	2260	2320	2220	2220	2210
Total Organic Carbon	mg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Initial pH	Std. Units	7.32							
Final pH	Std. Units	7.32	7.18	7.41	7.54	7.58	8.13	7.1	7.16

TABLE 1
LEACHATE SAMPLE RESULTS
CCR BENEFICIAL USE ASSESSMENT
AES/IPL PETERSBURG
PETERSBURG, INDIANA

Constituent	Units	WWTP Headworks 18 hr 07/11/2018 50201164019	WWTP Headworks 30 Day 07/11/2018 50201164020
Inorganic Compounds			
Aluminum	mg/L	0.62	0.2 U
Antimony	mg/L	0.008 U	0.008 U
Arsenic	mg/L	0.01 U	0.01 U
Barium	mg/L	0.029	0.024
Boron	mg/L	17.5	13.7
Cadmium	mg/L	0.002 U	0.002 U
Chromium	mg/L	0.01 U	0.01 U
Cobalt	mg/L	0.01 U	0.01 U
Copper	mg/L	0.01 U	0.01 U
Iron	mg/L	0.1 U	0.1 U
Lead	mg/L	0.01 U	0.01 U
Magnesium	mg/L	124	95.8
Manganese	mg/L	0.5	0.01 U
Mercury	mg/L	0.002 U	0.002 U
Molybdenum	mg/L	0.016	0.013
Nickel	mg/L	0.01 U	0.01 U
Potassium	mg/L	2.9	2.4
Selenium	mg/L	0.061	0.056
Silver	mg/L	0.01 U	0.01 U
Sodium	mg/L	27.9	21.6
Thallium	mg/L	0.01 U	0.01 U
Vanadium	mg/L	0.01 U	0.01 U
Zinc	mg/L	0.02 U	0.02 U
Other			
Acidity, Total	mg/L	10 U	17
Alkalinity, Total as CaCO3	mg/L	21.3	23.9
Chloride	mg/L	89	69.9
Fluoride	mg/L	7.8	7.8
pH at 25 Degrees C	Std. Units	8.2	7.5
Sulfate	mg/L	1040	868
Sulfide	mg/L	0.1 U	0.1 U
Total Dissolved Solids	mg/L	2940	2800
Total Organic Carbon	mg/L	1 U	1 U
Initial pH	Std. Units		
Final pH	Std. Units	8.04	7.73

TABLE 1
LEACHATE SAMPLE RESULTS
CCR BENEFICIAL USE ASSESSMENT
AES/IPL PETERSBURG

Notes:
Blank cells indicate constituent not analyzed.
CCR - Coal Combustion Residuals.
IUCS - IU Conversion Systems, Inc.
mg/L - milligrams per liter.
U - Constituent was not detected, value is the reporting limit.
WWT FGD - Wastewater Treatment Flue Gas Desulfurization.

Sampling results for antimony, cobalt, and thallium are available for the most recent sampling round only.

APPENDIX F-1

Bulk Solids Screening Analysis

TABLE 1
BULK (SOLID) MATERIAL SAMPLE RESULTS
CCR BENEFICIAL USE ASSESSMENT
AES/IPL PETERSBURG
PETERSBURG, INDIANA

Constituent	Units	Bottom Ash Bulk 01/09/2018 50188189005	Bottom Ash Bulk 10/03/2017 50181275005	Bottom Ash 04/04/2018 50193927005	Bottom Ash 07/11/2018 50201164001	Filter Cake (IUCS) 07/11/2018 50201164009	Filter Cake Bulk 01/09/2018 50188189013	Filter Cake Bulk 10/03/2017 50181275013	Filter Cake 04/04/2018 50193927013
Inorganic Compounds									
Aluminum	mg/kg	4880	4350	3930	5230	5240	5740	5220	4670
Antimony	mg/kg				0.9 U	0.97			
Arsenic	mg/kg	8.5	9.8	11	6.2	45.4	68.6	60.3	47.9
Barium	mg/kg	24.7	22.1	19.4	19.8	32.1	36.2	34.9	29.9
Boron	mg/kg	58.5	62.9	81.2	37.7	350	284	321	303
Cadmium	mg/kg	0.47 U	0.45 U	0.43 U	0.45 U	0.74	1.6	1.1	0.51
Chromium	mg/kg	11	8.8	9.1	8.1	20.2	28.5	22.9	19.5
Cobalt	mg/kg				2.5	4.4			
Copper	mg/kg	16.5	11.1	9.2	12.5	21.3	22.4	19.1	18.9
Iron	mg/kg	23600	20500	14100	15100	14800	23000	21300	14000
Lead	mg/kg	2.9	2.9	2.5	1.3	12.7	15.8	16.7	10.6
Magnesium	mg/kg	327	383	896	319	2390	1990	1840	2090
Manganese	mg/kg	23.9	32.6	39.2	24.9	47.4	56.1	45.5	50
Mercury	mg/kg	0.019 U	0.02 U	0.05	0.02 U	0.51	0.54	0.43	0.4
Molybdenum	mg/kg	3.9	2	3.1	3.1	19.4	19.6	14.6	20.2
Nickel	mg/kg	19.3	15.6	12.3	13.1	21.5	26.2	22.9	19.7
Potassium	mg/kg	712	537	484	697	914	1020	1060	878
Selenium	mg/kg	0.94 U	2.8	1.8	0.9 U	10.6	10.4	10.8	8.5
Silver	mg/kg	0.47 U	0.45 U	0.43 U	0.45 U	0.43 U	0.49 U	0.48 U	0.44 U
Sodium	mg/kg	207	201	378	189	5250	6260	6590	5600
Thallium	mg/kg				1.5	2.7			
Vanadium	mg/kg	23.2	18.8	16.8	22.9	41.9	52.4	41.2	38.7
Zinc	mg/kg	19.2	17.7	16.4	15	37.5	47	40.1	30
Other									
Acidity, Total	mg/kg	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U
Chloride	mg/kg	99.8 U	100 U	99.7 U	100 U	3100	2270	2860	2520
Fluoride	mg/kg	10 U	10 U	27.7	10 U	15.9	15.6	20.3	17.1
Percent Moisture	%	22.8	9.4	15.9	17.1	26.4	20.9	22.2	26
pH at 25 Degrees C	Std. Units	7.6	7.5	8.1	7.8	9.2	9	8.8	9.4
Sulfate	mg/kg	884	3100	18200	395	14200	13600	21200	21800
Sulfide	mg/kg	50 U	50 U	9220	50 U	50100	50100	32100	76100
Mean Total Organic Carbon	mg/kg	80600	44000	12500	29300	14200	12400	15700	6760

TABLE 1
BULK (SOLID) MATERIAL SAMPLE RESULTS
CCR BENEFICIAL USE ASSESSMENT
AES/IPL PETERSBURG
PETERSBURG, INDIANA

Constituent	Units	Fly Ash Bulk 01/09/2018 50188189017	Fly Ash Bulk 10/03/2017 50181275017	Fly Ash 04/04/2018 50193927017	Fly Ash 07/11/2018 50201164013	Gypsum Bulk 01/09/2018 50188189009	Gypsum Bulk 10/03/2017 50181275009	Gypsum 04/04/2018 50193927009	Gypsum 07/11/2018 50201164005	WWTP Headworks 07/11/2018 50201164017
Inorganic Compounds										
Aluminum	mg/kg	7750	8330	7610	7940	544	318	581	534	708
Antimony	mg/kg				1.3				0.9 U	0.86 U
Arsenic	mg/kg	121	114	101	81.2	3.1	1.5	2.9	2.1	2.8
Barium	mg/kg	53.9	54.6	54.8	55.9	11.2	6.3	12	15	12.3
Boron	mg/kg	345	329	288	414	48.3	14.6	59.6	29.1	269
Cadmium	mg/kg	1.6	1.6	0.7	0.91	0.42 U	0.47 U	0.48 U	0.45 U	0.43 U
Chromium	mg/kg	39.9	37.6	33.6	32.8	3.1	2.4	3.4	2.7	3.9
Cobalt	mg/kg				10.4				0.9 U	0.86 U
Copper	mg/kg	33.8	33.3	29.7	31.1	2.1	1.3	2.5	1.9	2.6
Iron	mg/kg	42000	39500	38900	45600	1050	622	1060	969	1430
Lead	mg/kg	29.5	31.4	23.9	24.4	0.85 U	0.93 U	0.96 U	0.9 U	0.86 U
Magnesium	mg/kg	586	553	524	846	1550	533	2540	621	2340
Manganese	mg/kg	52.2	50	55.7	55.9	25.9	14.7	22.2	13.2	19.4
Mercury	mg/kg	0.8	0.78	0.77	0.76	0.053	0.036	0.022	0.046	0.088
Molybdenum	mg/kg	30.4	29.1	23.9	14.2	0.85 U	0.93 U	0.96 U	0.9 U	0.98
Nickel	mg/kg	43.4	47	46.3	45.5	1.5	1.1	1.8	1.5	2.3
Potassium	mg/kg	1450	1540	1360	1310	186	122	195	177	252
Selenium	mg/kg	14.6	19.6	11.3	8.2	2.2	2.5	1.6	2.5	4.4
Silver	mg/kg	0.43 U	0.5 U	0.45 U	0.49 U	0.42 U	0.47 U	0.48 U	0.45 U	0.43 U
Sodium	mg/kg	20500	19200	8880	5920	196	46.6 U	60.2	63.4	282
Thallium	mg/kg				4.8				0.9 U	0.86 U
Vanadium	mg/kg	73	72.7	65	63.7	2.8	1.8	2.7	2.1	3.2
Zinc	mg/kg	74.5	71.8	59.3	58.3	9.4	5.8	10.8	7.6	11
Other										
Acidity, Total	mg/kg	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U
Chloride	mg/kg	5020	5070	3030	4420	183	99.7 U	213	102	1500
Fluoride	mg/kg	28.9	38.1	18.1	22.8	31.8	38	34.4	76.9	90.3
Percent Moisture	%	0.25	0.28	5.1	0.75	22.1	22.7	23.4	19.4	26.2
pH at 25 Degrees C	Std. Units	10.2	10.3	9.6	9.3	8.3	7.2	8	8.2	8.1
Sulfate	mg/kg	27700	28300	20600	11600	12200	12800	19100	11300	14900
Sulfide	mg/kg	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Mean Total Organic Carbon	mg/kg	17200	21200	24000	28100	712	667 U	664 U	673 U	868

TABLE 1
BULK (SOLID) MATERIAL SAMPLE RESULTS
CCR BENEFICIAL USE ASSESSMENT
AES/IPL PETERSBURG

Notes:
Blank cells indicate constituent not analyzed.
CCR - Coal Combustion Residuals.
IUCS - IU Conversion Systems, Inc.
mg/kg - milligrams per kilogram.
U - Constituent was not detected, value is the reporting limit.
WWT FGD - Wastewater Treatment Flue Gas Desulfurization.

Sampling results for antimony, cobalt, and thallium are available for the most recent sampling round only.

TABLE 2
SUMMARY OF BULK MATERIAL ANALYTICAL RESULTS WITH COMPARISON TO CONSTRUCTION WORKER SOIL SCREENING LEVELS - BOTTOM ASH
CCR BENEFICIAL USE ASSESSMENT
AES/IPL PETERSBURG
PETERSBURG, INDIANA

Constituent	Units	Frequency of Detection	Range of Reporting Limits for Non-Detects	Range of Detected Concentrations	Average of All Samples	Selected Soil Screening Level (a)	Max. or RL Exceeds Selected Screening Level?
Inorganic Compounds							
Aluminum	mg/kg	4 / 4		3930 - 5230	4598	100000	No
Antimony	mg/kg	0 / 1	0.9 : 0.9		0.5	790	No
Arsenic	mg/kg	4 / 4		6.2 - 11	8.9	920	No
Barium	mg/kg	4 / 4		19.4 - 24.7	21.5	100000	No
Boron	mg/kg	4 / 4		37.7 - 81.2	60.1	100000	No
Cadmium	mg/kg	0 / 4	0.43 : 0.47		0.2	1900	No
Chromium	mg/kg	4 / 4		8.1 - 11	9.3	100000	No
Chromium (b)	mg/kg	4 / 4		8.1 - 11	9.3	2700	No
Cobalt	mg/kg	1 / 1		2.5 - 2.5	2.5	590	No
Copper	mg/kg	4 / 4		9.2 - 16.5	12	79000	No
Iron	mg/kg	4 / 4		14100 - 23600	18325	100000	No
Lead	mg/kg	4 / 4		1.3 - 2.9	2.4	1000	No
Magnesium	mg/kg	4 / 4		319 - 896	481	NA	NA
Manganese	mg/kg	4 / 4		23.9 - 39.2	30	26000	No
Mercury	mg/kg	1 / 4	0.019 : 0.02	0.05 - 0.05	0.02	590	No
Molybdenum	mg/kg	4 / 4		2 - 3.9	3	9800	No
Nickel	mg/kg	4 / 4		12.3 - 19.3	15.1	38000	No
Potassium	mg/kg	4 / 4		484 - 712	608	NA	NA
Selenium	mg/kg	2 / 4	0.9 : 0.94	1.8 - 2.8	1.4	9800	No
Silver	mg/kg	0 / 4	0.43 : 0.47		0.23	9800	No
Sodium	mg/kg	4 / 4		189 - 378	244	NA	NA
Thallium	mg/kg	1 / 1		1.5 - 1.5	1.5	20	No
Vanadium	mg/kg	4 / 4		16.8 - 23.2	20.4	9900	No
Zinc	mg/kg	4 / 4		15 - 19.2	17	100000	No
Other							
Acidity, Total	mg/kg	0 / 4	100 : 100		50	NA	NA
Chloride	mg/kg	0 / 4	99.7 : 100		50	NA	NA
Fluoride	mg/kg	1 / 4	10 : 10	27.7 - 27.7	10.7	79000	No
Percent Moisture	%	4 / 4		9.4 - 22.8	16	NA	NA
pH at 25 Degrees C	Std. Units	4 / 4		7.5 - 8.1	7.8	NA	NA
Sulfate	mg/kg	4 / 4		395 - 18200	5645	NA	NA
Sulfide	mg/kg	1 / 4	50 : 50	9220 - 9220	2324	NA	NA
Total Organic Carbon	mg/kg	8 / 8		11000 - 86300	41625	NA	NA
Mean Total Organic Carbon	mg/kg	4 / 4		12500 - 80600	41600	NA	NA

Notes:
CCR - Coal Combustion Residuals.
IDEM - Indiana Department of Environmental Management.
Max. - Maximum Detected Concentration.
mg/kg - milligram per kilogram.
NA - Not Available/Not Applicable.
RL - Reporting Limit.
RSL - Risk Based Screening Level.
USEPA - United States Environmental Protection Agency.

- Concentration is below screening level.
- Concentration is above screening level.
- Reporting limit is above screening level.

(a) - The hierarchy for selection among the Human Health Screening Levels for Soil, as shown in Table 7-1, is:
1) IDEM Soil Exposure Direct Contact - Excavation.
2) May 2018 USEPA Industrial Soil RSLs HI = 1.
(b) - Chromium screened as both Total Chromium and Hexavalent Chromium to be conservative.

TABLE 3
SUMMARY OF BULK MATERIAL ANALYTICAL RESULTS WITH COMPARISON TO CONSTRUCTION WORKER SOIL SCREENING LEVELS - FLY ASH
CCR BENEFICIAL USE ASSESSMENT
AES/IPL PETERSBURG
PETERSBURG, INDIANA

Constituent	Units	Frequency of Detection	Range of Reporting Limits for Non-Detects	Range of Detected Concentrations	Average of All Samples	Selected Soil Screening Level (a)	Max. or RL Exceeds Selected Screening Level?
Inorganic Compounds							
Aluminum	mg/kg	4 / 4		7610 - 8330	7908	100000	No
Antimony	mg/kg	1 / 1		1.3 - 1.3	1.3	790	No
Arsenic	mg/kg	4 / 4		81.2 - 121	104	920	No
Barium	mg/kg	4 / 4		53.9 - 55.9	54.8	100000	No
Boron	mg/kg	4 / 4		288 - 414	344	100000	No
Cadmium	mg/kg	4 / 4		0.7 - 1.6	1.2	1900	No
Chromium	mg/kg	4 / 4		32.8 - 39.9	36.0	100000	No
Chromium (b)	mg/kg	4 / 4		32.8 - 39.9	36.0	2700	No
Cobalt	mg/kg	1 / 1		10.4 - 10.4	10.4	590	No
Copper	mg/kg	4 / 4		29.7 - 33.8	32.0	79000	No
Iron	mg/kg	4 / 4		38900 - 45600	41500	100000	No
Lead	mg/kg	4 / 4		23.9 - 31.4	27.3	1000	No
Magnesium	mg/kg	4 / 4		524 - 846	627	NA	NA
Manganese	mg/kg	4 / 4		50 - 55.9	53	26000	No
Mercury	mg/kg	4 / 4		0.76 - 0.8	0.78	590	No
Molybdenum	mg/kg	4 / 4		14.2 - 30.4	24.4	9800	No
Nickel	mg/kg	4 / 4		43.4 - 47	46	38000	No
Potassium	mg/kg	4 / 4		1310 - 1540	1415	NA	NA
Selenium	mg/kg	4 / 4		8.2 - 19.6	13	9800	No
Silver	mg/kg	0 / 4	0.43 : 0.5		0.2	9800	No
Sodium	mg/kg	4 / 4		5920 - 20500	13625	NA	NA
Thallium	mg/kg	1 / 1		4.8 - 4.8	4.8	20	No
Vanadium	mg/kg	4 / 4		63.7 - 73	69	9900	No
Zinc	mg/kg	4 / 4		58.3 - 74.5	66.0	100000	No
Other							
Acidity, Total	mg/kg	0 / 4	100 : 100		50	NA	NA
Chloride	mg/kg	4 / 4		3030 - 5070	4385	NA	NA
Fluoride	mg/kg	4 / 4		18.1 - 38.1	27.0	79000	No
Percent Moisture	%	4 / 4		0.25 - 5.1	1.6	NA	NA
pH at 25 Degrees C	Std. Units	4 / 4		9.3 - 10.3	10	NA	NA
Sulfate	mg/kg	4 / 4		11600 - 28300	22050	NA	NA
Sulfide	mg/kg	0 / 4	50 : 50		25	NA	NA
Total Organic Carbon	mg/kg	8 / 8		17100 - 28200	22638	NA	NA
Mean Total Organic Carbon	mg/kg	4 / 4		17200 - 28100	22625	NA	NA

Notes:
CCR - Coal Combustion Residuals.
IDEM - Indiana Department of Environmental Management.
Max. - Maximum Detected Concentration.
mg/kg - milligram per kilogram.
NA - Not Available/Not Applicable.
RL - Reporting Limit.
RSL - Risk Based Screening Level.
USEPA - United States Environmental Protection Agency.

- Concentration is below screening level.
- Concentration is above screening level.
- Reporting limit is above screening level.

(a) - The hierarchy for selection among the Human Health Screening Levels for Soil, as shown in Table 7-1, is:
1) IDEM Soil Exposure Direct Contact - Excavation.
2) May 2018 USEPA Industrial Soil RSLs HI = 1.
(b) - Chromium screened as both Total Chromium and Hexavalent Chromium to be conservative.

TABLE 4
SUMMARY OF BULK MATERIAL ANALYTICAL RESULTS WITH COMPARISON TO CONSTRUCTION WORKER SOIL SCREENING LEVELS - GYPSUM
CCR BENEFICIAL USE ASSESSMENT
AES/IPL PETERSBURG
PETERSBURG, INDIANA

Constituent	Units	Frequency of Detection	Range of Reporting Limits for Non-Detects	Range of Detected Concentrations	Average of All Samples	Selected Soil Screening Level (a)	Max. or RL Exceeds Selected Screening Level?
Inorganic Compounds							
Aluminum	mg/kg	4 / 4		318 - 581	494	100000	No
Antimony	mg/kg	0 / 1	0.9 : 0.9		0.5	790	No
Arsenic	mg/kg	4 / 4		1.5 - 3.1	2.4	920	No
Barium	mg/kg	4 / 4		6.3 - 15	11	100000	No
Boron	mg/kg	4 / 4		14.6 - 59.6	37.9	100000	No
Cadmium	mg/kg	0 / 4	0.42 : 0.48		0.2	1900	No
Chromium	mg/kg	4 / 4		2.4 - 3.4	2.9	100000	No
Chromium (b)	mg/kg	4 / 4		2.4 - 3.4	2.9	2700	No
Cobalt	mg/kg	0 / 1	0.9 : 0.9		0.5	590	No
Copper	mg/kg	4 / 4		1.3 - 2.5	2.0	79000	No
Iron	mg/kg	4 / 4		622 - 1060	925	100000	No
Lead	mg/kg	0 / 4	0.85 : 0.96		0.46	1000	No
Magnesium	mg/kg	4 / 4		533 - 2540	1311	NA	NA
Manganese	mg/kg	4 / 4		13.2 - 25.9	19.0	26000	No
Mercury	mg/kg	4 / 4		0.022 - 0.053	0.04	590	No
Molybdenum	mg/kg	0 / 4	0.85 : 0.96		0.5	9800	No
Nickel	mg/kg	4 / 4		1.1 - 1.8	1.5	38000	No
Potassium	mg/kg	4 / 4		122 - 195	170	NA	NA
Selenium	mg/kg	4 / 4		1.6 - 2.5	2.2	9800	No
Silver	mg/kg	0 / 4	0.42 : 0.48		0.23	9800	No
Sodium	mg/kg	3 / 4	46.6 : 46.6	60.2 - 196	85.7	NA	NA
Thallium	mg/kg	0 / 1	0.9 : 0.9		0.5	20	No
Vanadium	mg/kg	4 / 4		1.8 - 2.8	2.4	9900	No
Zinc	mg/kg	4 / 4		5.8 - 10.8	8.4	100000	No
Other							
Acidity, Total	mg/kg	0 / 4	100 : 100		50	NA	NA
Chloride	mg/kg	3 / 4	99.7 : 99.7	102 - 213	137	NA	NA
Fluoride	mg/kg	4 / 4		31.8 - 76.9	45.3	79000	No
Percent Moisture	%	4 / 4		19.4 - 23.4	21.9	NA	NA
pH at 25 Degrees C	Std. Units	4 / 4		7.2 - 8.3	7.9	NA	NA
Sulfate	mg/kg	4 / 4		11300 - 19100	13850	NA	NA
Sulfide	mg/kg	0 / 4	50 : 50		25	NA	NA
Total Organic Carbon	mg/kg	1 / 8	664 : 675	764 - 764	388	NA	NA
Mean Total Organic Carbon	mg/kg	1 / 4	664 : 673	712 - 712	429	NA	NA

Notes:
CCR - Coal Combustion Residuals.
IDEM - Indiana Department of Environmental Management.
Max. - Maximum Detected Concentration.
mg/kg - milligram per kilogram.
NA - Not Available/Not Applicable.
RL - Reporting Limit.
RSL - Risk Based Screening Level.
USEPA - United States Environmental Protection Agency.

- Concentration is below screening level.
- Concentration is above screening level.
- Reporting limit is above screening level.

(a) - The hierarchy for selection among the Human Health Screening Levels for Soil, as shown in Table 7-1, is:
1) IDEM Soil Exposure Direct Contact - Excavation.
2) May 2018 USEPA Industrial Soil RSLs HI = 1.
(b) - Chromium screened as both Total Chromium and Hexavalent Chromium to be conservative.

TABLE 5
SUMMARY OF BULK MATERIAL ANALYTICAL RESULTS WITH COMPARISON TO CONSTRUCTION WORKER SOIL SCREENING LEVELS - FILTER CAKE
CCR BENEFICIAL USE ASSESSMENT
AES/IPL PETERSBURG
PETERSBURG, INDIANA

Constituent	Units	Frequency of Detection	Range of Reporting Limits for Non-Detects	Range of Detected Concentrations	Average of All Samples	Selected Soil Screening Level (a)	Max. or RL Exceeds Selected Screening Level?
Inorganic Compounds							
Aluminum	mg/kg	4 / 4		4670 - 5740	5218	100000	No
Antimony	mg/kg	1 / 1		0.97 - 0.97	1.0	790	No
Arsenic	mg/kg	4 / 4		45.4 - 68.6	55.6	920	No
Barium	mg/kg	4 / 4		29.9 - 36.2	33.3	100000	No
Boron	mg/kg	4 / 4		284 - 350	315	100000	No
Cadmium	mg/kg	4 / 4		0.51 - 1.6	1.0	1900	No
Chromium	mg/kg	4 / 4		19.5 - 28.5	22.8	100000	No
Chromium (b)	mg/kg	4 / 4		19.5 - 28.5	22.8	2700	No
Cobalt	mg/kg	1 / 1		4.4 - 4.4	4.4	590	No
Copper	mg/kg	4 / 4		18.9 - 22.4	20.4	79000	No
Iron	mg/kg	4 / 4		14000 - 23000	18275	100000	No
Lead	mg/kg	4 / 4		10.6 - 16.7	14.0	1000	No
Magnesium	mg/kg	4 / 4		1840 - 2390	2078	NA	NA
Manganese	mg/kg	4 / 4		45.5 - 56.1	49.8	26000	No
Mercury	mg/kg	4 / 4		0.4 - 0.54	0.47	590	No
Molybdenum	mg/kg	4 / 4		14.6 - 20.2	18.5	9800	No
Nickel	mg/kg	4 / 4		19.7 - 26.2	22.6	38000	No
Potassium	mg/kg	4 / 4		878 - 1060	968	NA	NA
Selenium	mg/kg	4 / 4		8.5 - 10.8	10	9800	No
Silver	mg/kg	0 / 4	0.43 : 0.49		0.23	9800	No
Sodium	mg/kg	4 / 4		5250 - 6590	5925	NA	NA
Thallium	mg/kg	1 / 1		2.7 - 2.7	2.7	20	No
Vanadium	mg/kg	4 / 4		38.7 - 52.4	43.6	9900	No
Zinc	mg/kg	4 / 4		30 - 47	39	100000	No
Other							
Acidity, Total	mg/kg	0 / 4	100 : 100		50	NA	NA
Chloride	mg/kg	4 / 4		2270 - 3100	2688	NA	NA
Fluoride	mg/kg	4 / 4		15.6 - 20.3	17.2	79000	No
Percent Moisture	%	4 / 4		20.9 - 26.4	23.9	NA	NA
pH at 25 Degrees C	Std. Units	4 / 4		8.8 - 9.4	9.1	NA	NA
Sulfate	mg/kg	4 / 4		13600 - 21800	17700	NA	NA
Sulfide	mg/kg	4 / 4		32100 - 76100	52100	NA	NA
Total Organic Carbon	mg/kg	8 / 8		6550 - 16100	12276	NA	NA
Mean Total Organic Carbon	mg/kg	4 / 4		6760 - 15700	12265	NA	NA

Notes:
CCR - Coal Combustion Residuals.
IDEM - Indiana Department of Environmental Management.
Max. - Maximum Detected Concentration.
mg/kg - milligram per kilogram.
NA - Not Available/Not Applicable.
RL - Reporting Limit.
RSL - Risk Based Screening Level.
USEPA - United States Environmental Protection Agency.

- Concentration is below screening level.
- Concentration is above screening level.
- Reporting limit is above screening level.

(a) - The hierarchy for selection among the Human Health Screening Levels for Soil, as shown in Table 7-1, is:
1) IDEM Soil Exposure Direct Contact - Excavation.
2) May 2018 USEPA Industrial Soil RSLs HI = 1.
(b) - Chromium screened as both Total Chromium and Hexavalent Chromium to be conservative.

TABLE 6
SUMMARY OF BULK MATERIAL ANALYTICAL RESULTS WITH COMPARISON TO CONSTRUCTION WORKER SOIL SCREENING LEVELS - WWTP HEADWORKS
CCR BENEFICIAL USE ASSESSMENT
AES/IPL PETERSBURG
PETERSBURG, INDIANA

Constituent	Units	Frequency of Detection	Range of Reporting Limits for Non-Detects	Range of Detected Concentrations	Average of All Samples	Selected Soil Screening Level (a)	Max. or RL Exceeds Selected Screening Level?
Inorganic Compounds							
Aluminum	mg/kg	1 / 1		708 - 708	708	100000	No
Antimony	mg/kg	0 / 1	0.86 : 0.86		0.4	790	No
Arsenic	mg/kg	1 / 1		2.8 - 2.8	2.8	920	No
Barium	mg/kg	1 / 1		12.3 - 12.3	12.3	100000	No
Boron	mg/kg	1 / 1		269 - 269	269	100000	No
Cadmium	mg/kg	0 / 1	0.43 : 0.43		0.2	1900	No
Chromium	mg/kg	1 / 1		3.9 - 3.9	3.9	100000	No
Chromium (b)	mg/kg	1 / 1		3.9 - 3.9	3.9	2700	No
Cobalt	mg/kg	0 / 1	0.86 : 0.86		0.4	590	No
Copper	mg/kg	1 / 1		2.6 - 2.6	2.6	79000	No
Iron	mg/kg	1 / 1		1430 - 1430	1430	100000	No
Lead	mg/kg	0 / 1	0.86 : 0.86		0.4	1000	No
Magnesium	mg/kg	1 / 1		2340 - 2340	2340	NA	NA
Manganese	mg/kg	1 / 1		19.4 - 19.4	19.4	26000	No
Mercury	mg/kg	1 / 1		0.088 - 0.088	0.088	590	No
Molybdenum	mg/kg	1 / 1		0.98 - 0.98	1.0	9800	No
Nickel	mg/kg	1 / 1		2.3 - 2.3	2.3	38000	No
Potassium	mg/kg	1 / 1		252 - 252	252	NA	NA
Selenium	mg/kg	1 / 1		4.4 - 4.4	4.4	9800	No
Silver	mg/kg	0 / 1	0.43 : 0.43		0.2	9800	No
Sodium	mg/kg	1 / 1		282 - 282	282	NA	NA
Thallium	mg/kg	0 / 1	0.86 : 0.86		0.4	20	No
Vanadium	mg/kg	1 / 1		3.2 - 3.2	3.2	9900	No
Zinc	mg/kg	1 / 1		11 - 11	11	100000	No
Other							
Acidity, Total	mg/kg	0 / 1	100 : 100		50	NA	NA
Chloride	mg/kg	1 / 1		1500 - 1500	1500	NA	NA
Fluoride	mg/kg	1 / 1		90.3 - 90.3	90.3	79000	No
Percent Moisture	%	1 / 1		26.2 - 26.2	26.2	NA	NA
pH at 25 Degrees C	Std. Units	1 / 1		8.1 - 8.1	8.1	NA	NA
Sulfate	mg/kg	1 / 1		14900 - 14900	14900	NA	NA
Sulfide	mg/kg	0 / 1	50 : 50		25	NA	NA
Total Organic Carbon	mg/kg	2 / 2		747 - 989	868	NA	NA
Mean Total Organic Carbon	mg/kg	1 / 1		868 - 868	868	NA	NA

Notes:
CCR - Coal Combustion Residuals.
IDEM - Indiana Department of Environmental Management.
Max. - Maximum Detected Concentration.
mg/kg - milligram per kilogram.
NA - Not Available/Not Applicable.
RL - Reporting Limit.
RSL - Risk Based Screening Level.
USEPA - United States Environmental Protection Agency.
WWT FGD - Wastewater Treatment Flue Gas Desulfurization.

- Concentration is below screening level.
- Concentration is above screening level.
- Reporting limit is above screening level.

(a) - The hierarchy for selection among the Human Health Screening Levels for Soil, as shown in Table 7-1, is:
1) IDEM Soil Exposure Direct Contact - Excavation.
2) May 2018 USEPA Industrial Soil RSLs HI = 1.
(b) - Chromium screened as both Total Chromium and Hexavalent Chromium to be conservative.

TABLE 4
SUMMARY OF ESTIMATED LEACHING POTENTIAL WITH COMPARISON TO DRINKING WATER AND SURFACE WATER SCREENING LEVELS - FILTER CAKE
CCR BENEFICIAL USE ASSESSMENT
AES/IPL PETERSBURG
PETERSBURG, INDIANA

	Solids Data			Estimated Leaching Potential		Selected Screening Levels				Screening			
Constituent	Units	Maximum Reporting Limit	Maximum Detected Concentration	Units	Max. or RL - Leaching Potential Concentration (a)	Selected HH DW SL (b) (mg/L)	Selected HH SW SL - Consumption of Organism Only (c) (mg/L)	Selected Eco SW SL - Acute (d) (mg/L)	Selected Eco SW SL - Chronic (d) (mg/L)	Max. or RL Exceeds Selected HH DW SL?	Max. or RL Exceeds Selected HH SW SL - Consumption of Organism Only?	Max. or RL Exceeds Selected Eco SW SL - Acute?	Max. or RL Exceeds Selected Eco SW SL - Chronic?
Inorganic Compounds													
Aluminum	mg/kg		5740	mg/L	287	20	NA	NA	NA	Yes	NA	NA	NA
Antimony	mg/kg		0.97	mg/L	0.049	0.006	0.64	NA	NA	Yes	No	NA	NA
Arsenic	mg/kg		68.6	mg/L	3.43	0.01	0.000175	0.34	0.15	Yes	Yes	Yes	Yes
Barium	mg/kg		36.2	mg/L	1.81	2	NA	NA	NA	No	NA	NA	NA
Boron	mg/kg		350	mg/L	17.5	4	NA	NA	NA	Yes	NA	NA	NA
Cadmium	mg/kg		1.6	mg/L	0.08	0.005	NA	0.002	0.001	Yes	NA	Yes	Yes
Chromium	mg/kg		28.5	mg/L	1.43	0.1	NA	NA	NA	Yes	NA	NA	NA
Chromium (e)	mg/kg		28.5	mg/L	1.43	0.00035	NA	0.02	0.01	Yes	NA	Yes	Yes
Cobalt	mg/kg		4.4	mg/L	0.22	0.006	NA	NA	NA	Yes	NA	NA	NA
Copper	mg/kg		22.4	mg/L	1.12	1.3	NA	0.01	0.01	No	NA	Yes	Yes
Iron	mg/kg		23000	mg/L	1150	14	NA	NA	1	Yes	NA	NA	Yes
Lead	mg/kg		16.7	mg/L	0.835	0.015	NA	0.10	0.01	Yes	NA	Yes	Yes
Magnesium	mg/kg		2390	mg/L	119.5	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg		56.1	mg/L	2.81	0.43	0.1	NA	NA	Yes	Yes	NA	NA
Mercury	mg/kg		0.54	mg/L	0.027	0.002	0.00015	0.001	0.001	Yes	Yes	Yes	Yes
Molybdenum	mg/kg		20.2	mg/L	1.01	0.1	NA	NA	NA	Yes	NA	NA	NA
Nickel	mg/kg		26.2	mg/L	1.31	0.39	4.6	0.47	0.05	Yes	No	Yes	Yes
Potassium	mg/kg		1060	mg/L	53	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg		10.8	mg/L	0.540	0.05	4.2	NA	0.003	Yes	No	NA	Yes
Silver	mg/kg	0.49		mg/L	0.025	0.094	NA	0.003	NA	No	NA	RL	NA
Sodium	mg/kg		6590	mg/L	329.5	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg		2.7	mg/L	0.14	0.002	0.048	NA	NA	Yes	Yes	NA	NA
Vanadium	mg/kg		52.4	mg/L	2.62	0.086	NA	NA	NA	Yes	NA	NA	NA
Zinc	mg/kg		47	mg/L	2.4	6	26	0.12	0.12	No	No	Yes	Yes
Other													
Acidity, Total	mg/kg	100		mg/L	5	NA	NA	NA	NA	NA	NA	NA	NA
Chloride	mg/kg		3100	mg/L	155	250	NA	860	230	No	NA	No	No
Fluoride	mg/kg		20.3	mg/L	1.02	0.8	NA	NA	NA	Yes	NA	NA	NA
Percent Moisture	%		26.4	%	NA	NA	NA	NA	NA	NA	NA	NA	NA
pH at 25 Degrees C	Std. Units		9.4	Std. Units	NA	NA	NA	NA	6.5-9	NA	NA	NA	NA
Sulfate	mg/kg		21800	mg/L	1090	250	NA	NA	NA	Yes	NA	NA	NA
Sulfide	mg/kg		76100	mg/L	3805	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	mg/kg		16100	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mean Total Organic Carbon	mg/kg		15700	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
CCR - Coal Combustion Residuals.
CCC - Continuous Criterion Concentration.
DW - Drinking Water.
Eco - Ecological.
IDEM - Indiana Department of Environmental Management.
HH - Human Health.
HLSC - Human Life-Cycle Safe Concentration.
Max. - Maximum Detected Concentration.
mg/L - milligram per liter.
MPL - Maximum Permissible Level.
NA - Not Available/Not Applicable.
NRWQC - National Recommended Water Quality Criteria.
RL - Reporting Limit.
RSL - Risk Based Screening Level.
SL - Screening Level.
SW - Surface Water.
USEPA - United States Environmental Protection Agency.

- Concentration is below screening level.
- Concentration is above screening level.
- Reporting limit is above screening level.

(a) - Leaching potential value is estimated as the maximum detected concentration or reporting limit for solids divided by 20.
(b) - The hierarchy for selection among the Human Health Screening Levels for Drinking Water, as shown in Table 7-2, is:
1) IDEM Groundwater Tap Residential.
2) IDEM MPL.
3) USEPA RSL - Tap Water.
(c) - The hierarchy for selection among the Human Health Screening Levels for Surface Water - Consumption of Organism Only, as shown in Table 7-2, is:
1) IDEM CCC HLSC - Consumption of Organism Only (proposed).
2) IDEM CCC HLSC - Consumption of Organism Only (current).
3) USEPA NRWQC - Consumption of Organism Only.
(d) - The hierarchy for the selection of ecological screening levels, as shown in Table 7-3, is:
1) IDEM Aquatic Life Criterion (proposed).
2) IDEM Aquatic Life Criterion (current).
3) USEPA NRWQC. Aquatic Life Criteria - Freshwater.
(e) - Chromium screened as both Total Chromium and Hexavalent Chromium to be conservative.

TABLE 5
SUMMARY OF ESTIMATED LEACHING POTENTIAL WITH COMPARISON TO DRINKING WATER AND SURFACE WATER SCREENING LEVELS -
WWTP HEADWORKS
CCR BENEFICIAL USE ASSESSMENT
AES/IPL PETERSBURG
PETERSBURG, INDIANA

	Solids Data			Estimated Leaching Potential		Selected Screening Levels				Screening			
Constituent	Units	Maximum Reporting Limit	Maximum Detected Concentration	Units	Max. or RL - Leaching Potential Concentration (a)	Selected HH DW SL (b) (mg/L)	Selected HH SW SL - Consumption of Organism Only (c) (mg/L)	Selected Eco SW SL - Acute (d) (mg/L)	Selected Eco SW SL - Chronic (d) (mg/L)	Max. or RL Exceeds Selected HH DW SL?	Max. or RL Exceeds Selected HH SW SL - Consumption of Organism Only?	Max. or RL Exceeds Selected Eco SW SL - Acute?	Max. or RL Exceeds Selected Eco SW SL - Chronic?
Inorganic Compounds													
Aluminum	mg/kg		708	mg/L	35.4	20	NA	NA	NA	Yes	NA	NA	NA
Antimony	mg/kg	0.86		mg/L	0.043	0.006	0.64	NA	NA	RL	No	NA	NA
Arsenic	mg/kg		2.8	mg/L	0.14	0.01	0.000175	0.34	0.15	Yes	Yes	No	No
Barium	mg/kg		12.3	mg/L	0.615	2	NA	NA	NA	No	NA	NA	NA
Boron	mg/kg		269	mg/L	13.5	4	NA	NA	NA	Yes	NA	NA	NA
Cadmium	mg/kg	0.43		mg/L	0.022	0.005	NA	0.002	0.001	RL	NA	RL	RL
Chromium	mg/kg		3.9	mg/L	0.20	0.1	NA	NA	NA	Yes	NA	NA	NA
Chromium (e)	mg/kg		3.9	mg/L	0.20	0.00035	NA	0.02	0.01	Yes	NA	Yes	Yes
Cobalt	mg/kg	0.86		mg/L	0.043	0.006	NA	NA	NA	RL	NA	NA	NA
Copper	mg/kg		2.6	mg/L	0.13	1.3	NA	0.01	0.01	No	NA	Yes	Yes
Iron	mg/kg		1430	mg/L	71.5	14	NA	NA	1	Yes	NA	NA	Yes
Lead	mg/kg	0.86		mg/L	0.043	0.015	NA	0.10	0.01	RL	NA	No	RL
Magnesium	mg/kg		2340	mg/L	117	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg		19.4	mg/L	0.970	0.43	0.1	NA	NA	Yes	Yes	NA	NA
Mercury	mg/kg		0.088	mg/L	0.0044	0.002	0.00015	0.001	0.001	Yes	Yes	Yes	Yes
Molybdenum	mg/kg		0.98	mg/L	0.049	0.1	NA	NA	NA	No	NA	NA	NA
Nickel	mg/kg		2.3	mg/L	0.12	0.39	4.6	0.47	0.05	No	No	No	Yes
Potassium	mg/kg		252	mg/L	12.6	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg		4.4	mg/L	0.22	0.05	4.2	NA	0.003	Yes	No	NA	Yes
Silver	mg/kg	0.43		mg/L	0.022	0.094	NA	0.003	NA	No	NA	RL	NA
Sodium	mg/kg		282	mg/L	14.1	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	0.86		mg/L	0.043	0.002	0.048	NA	NA	RL	No	NA	NA
Vanadium	mg/kg		3.2	mg/L	0.16	0.086	NA	NA	NA	Yes	NA	NA	NA
Zinc	mg/kg		11	mg/L	0.55	6	26	0.12	0.12	No	No	Yes	Yes
Other													
Acidity, Total	mg/kg	100		mg/L	5	NA	NA	NA	NA	NA	NA	NA	NA
Chloride	mg/kg		1500	mg/L	75	250	NA	860	230	No	NA	No	No
Fluoride	mg/kg		90.3	mg/L	4.52	0.8	NA	NA	NA	Yes	NA	NA	NA
Percent Moisture	%		26.2	%	NA	NA	NA	NA	NA	NA	NA	NA	NA
pH at 25 Degrees C	Std. Units		8.1	Std. Units	NA	NA	NA	NA	6.5-9	NA	NA	NA	NA
Sulfate	mg/kg		14900	mg/L	745	250	NA	NA	NA	Yes	NA	NA	NA
Sulfide	mg/kg	50		mg/L	2.5	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	mg/kg		989	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mean Total Organic Carbon	mg/kg		868	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

CCR - Coal Combustion Residuals.
CCC - Continuous Criterion Concentration.
DW - Drinking Water.
Eco - Ecological.
IDEM - Indiana Department of Environmental Management.
HH - Human Health.
HLSC - Human Life-Cycle Safe Concentration.
Max. - Maximum Detected Concentration.
mg/L - milligram per liter.
MPL - Maximum Permissible Level.
NA - Not Available/Not Applicable.
NRWQC - National Recommended Water Quality Criteria.
RL - Reporting Limit.
RSL - Risk Based Screening Level.
SL - Screening Level.
SW - Surface Water.
USEPA - United States Environmental Protection Agency.

- Concentration is below screening level.
- Concentration is above screening level.
- Reporting limit is above screening level.

(a) - Leaching potential value is estimated as the maximum detected concentration or reporting limit for solids divided by 20.
(b) - The hierarchy for selection among the Human Health Screening Levels for Drinking Water, as shown in Table 7-2, is:
1) IDEM Groundwater Tap Residential.
2) IDEM MPL.
3) USEPA RSL - Tap Water.
(c) - The hierarchy for selection among the Human Health Screening Levels for Surface Water - Consumption of Organism Only, as shown in Table 7-2, is:
1) IDEM CCC HLSC - Consumption of Organism Only (proposed).
2) IDEM CCC HLSC - Consumption of Organism Only (current).
3) USEPA NRWQC - Consumption of Organism Only.
(d) - The hierarchy for the selection of ecological screening levels, as shown in Table 7-3, is:
1) IDEM Aquatic Life Criterion (proposed).
2) IDEM Aquatic Life Criterion (current).
3) USEPA NRWQC. Aquatic Life Criteria - Freshwater.
(e) - Chromium screened as both Total Chromium and Hexavalent Chromium to be conservative.

APPENDIX F-2

Leachate Extraction Screening Analysis

TABLE 1
LEACHATE SAMPLE RESULTS
CCR BENEFICIAL USE ASSESSMENT
AES/IPL PETERSBURG
PETERSBURG, INDIANA

Constituent	Units	Bottom Ash 18 hr 01/09/2018 50188189007	Bottom Ash 18 hr 10/03/2017 50181275007	Bottom Ash 18 hr 04/04/2018 50193927007	Bottom Ash 18 hr 07/11/2018 50201164003	Bottom Ash 30 Day 01/09/2018 50188189008	Bottom Ash 30 Day 04/04/2018 50193927008	Bottom Ash 30 Day 07/11/2018 50201164004	Bottom Ash 30 day 10/03/2017 50181275008
Inorganic Compounds									
Aluminum	mg/L	0.2 U	0.42	0.42	0.77	0.2 U	2.2	0.31	0.31
Antimony	mg/L				0.006 U			0.008 U	
Arsenic	mg/L	0.01 U	0.025	0.01 U	0.016	0.01 U	0.013	0.01 U	0.01 U
Barium	mg/L	0.01	0.023	0.027	0.01 U	0.025	0.038	0.01 U	0.024
Boron	mg/L	0.38	0.45	1.5	0.1 U	0.66	1.7	0.22	0.77
Cadmium	mg/L	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Chromium	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Cobalt	mg/L				0.01 U			0.01 U	
Copper	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Iron	mg/L	0.29	0.1 U	0.1 U	0.12	0.41	3.6	0.33	0.65
Lead	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Magnesium	mg/L	1.3	2.5	4.2	1 U	2.8	6.9	1.2	4.4
Manganese	mg/L	0.012	0.01 U	0.048	0.01 U	0.053	0.021	0.012	0.034
Mercury	mg/L	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Molybdenum	mg/L	0.01 U	0.01 U	0.03	0.01 U	0.022	0.042	0.016	0.013
Nickel	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.021	0.01 U	0.01 U	0.01 U
Potassium	mg/L	1 U	1 U	1 U	1 U	1.9	2.9	2.4	2.5
Selenium	mg/L	0.01 U	0.01 U	0.01	0.01 U	0.01 U	0.017	0.01 U	0.01 U
Silver	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Sodium	mg/L	1 U	1.1	10.4	1.3	1 U	11.7	2.1	2.2
Thallium	mg/L				0.01 U			0.01 U	
Vanadium	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.011	0.01 U	0.01 U
Zinc	mg/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Other									
Acidity, Total	mg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Alkalinity, Total as CaCO3	mg/L	8.6	11.6	10.1	15.8	21.2	22.7	14.1	25.7
Chloride	mg/L	1 U	1.8	3.4	1 U	1 U	4.1	1 U	2.2
Fluoride	mg/L	0.53	0.32	3.3	0.1 U	4	4	0.1 U	0.4
pH at 25 Degrees C	Std. Units	7.6	8.4	7.9	9	7.1	7.7	7.2	7.8
Sulfate	mg/L	46.1	289	1810	20.1	75.9	1830	39.6	181
Sulfide	mg/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Total Dissolved Solids	mg/L	88	435	2210	24	144	2270	70	270
Total Organic Carbon	mg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Initial pH	Std. Units	6.9							
Final pH	Std. Units	6.9	7.93	7.21	8.52	7.41	8.17	7.08	7.57

TABLE 1
LEACHATE SAMPLE RESULTS
CCR BENEFICIAL USE ASSESSMENT
AES/IPL PETERSBURG
PETERSBURG, INDIANA

Constituent	Units	Filter Cake (IUCS) 18 hr 07/11/2018 50201164011	Filter Cake (IUCS) 30 Day 07/11/2018 50201164012	Filter Cake 18 hr 01/09/2018 50188189015	Filter Cake 18 hr 10/03/2017 50181275015	Filter Cake 18 hr 04/04/2018 50193927015	Filter Cake 30 Day 01/09/2018 50188189016	Filter Cake 30 Day 04/04/2018 50193927016	Filter Cake 30 day 10/03/2017 50181275016
Inorganic Compounds									
Aluminum	mg/L	0.38	0.48	0.48	0.49	0.43	0.56	0.69	0.7
Antimony	mg/L	0.03	0.032						
Arsenic	mg/L	0.21	0.27	0.29	0.14	0.29	0.42	0.39	0.29
Barium	mg/L	0.058	0.079	0.054	0.078	0.071	0.069	0.11	0.1
Boron	mg/L	13.9	14.5	11	10.9	11.7	11.5	12.6	11.7
Cadmium	mg/L	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Chromium	mg/L	0.01 U	0.01 U	0.011	0.01 U	0.015	0.01 U	0.014	0.01 U
Cobalt	mg/L	0.01 U	0.01 U						
Copper	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Iron	mg/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.17
Lead	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Magnesium	mg/L	13.2	15.2	5.7	8	8.9	12.8	9.8	9
Manganese	mg/L	0.01 U	0.011	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.011
Mercury	mg/L	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Molybdenum	mg/L	0.85	0.85	0.87	0.6	0.95	0.73	0.96	0.63
Nickel	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Potassium	mg/L	7	7.1	7.7	8.8	6.9	6.9	7.4	9.4
Selenium	mg/L	0.34	0.3	0.3	0.23	0.29	0.27	0.29	0.2
Silver	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Sodium	mg/L	277	256	317	269	282	272	285	277
Thallium	mg/L	0.01 U	0.01 U						
Vanadium	mg/L	0.13	0.17	0.13	0.049	0.13	0.17	0.23	0.12
Zinc	mg/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Other									
Acidity, Total	mg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Alkalinity, Total as CaCO3	mg/L	74.2	63.7	72.5	63.6	87	77.5	81.3	67
Chloride	mg/L	160	141	121	137	133	120	135	133
Fluoride	mg/L	0.9	1.2	1.3	1.5	1.2	1.8	1.7	2.3
pH at 25 Degrees C	Std. Units	9.1	8.9	9.4	9.1	9.2	9.1	9.2	9.1
Sulfate	mg/L	870	868	1650	1690	1500	1540	1810	2000
Sulfide	mg/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Total Dissolved Solids	mg/L	2320	2870	2570	3000	1930	2840	2720	3070
Total Organic Carbon	mg/L	1 U	1 U	1.3	1 U	1.3	1 U	1 U	1 U
Initial pH	Std. Units			9.39					
Final pH	Std. Units	8.67	8.68	9.39	9.02	9.25	9.14	9.18	9

TABLE 1
LEACHATE SAMPLE RESULTS
CCR BENEFICIAL USE ASSESSMENT
AES/IPL PETERSBURG
PETERSBURG, INDIANA

Constituent	Units	Fly Ash 18 hr 01/09/2018 50188189019	Fly Ash 18 hr 10/03/2017 50181275019	Fly Ash 18 hr 04/04/2018 50193927019	Fly Ash 18 hr 07/11/2018 50201164015	Fly Ash 30 Day 01/09/2018 50188189020	Fly Ash 30 Day 04/04/2018 50193927020	Fly Ash 30 Day 07/11/2018 50201164016	Fly Ash 30 day 10/03/2017 50181275020
Inorganic Compounds									
Aluminum	mg/L	5	5.8	3.3	1.1	5.5	8.9	1	6.3
Antimony	mg/L				0.021			0.035	
Arsenic	mg/L	1.6	1.9	1.6	0.49	2	2.1	0.7	2.2
Barium	mg/L	0.01 U	0.012	0.01 U	0.02	0.016	0.036	0.035	0.014
Boron	mg/L	11.3	9.8	8.5	24.1	12.7	8.6	24	11.3
Cadmium	mg/L	0.01 U	0.002 U	0.0046	0.002 U	0.01 U	0.0024	0.0021	0.002 U
Chromium	mg/L	0.021	0.025	0.023	0.01 U	0.031	0.034	0.012	0.034
Cobalt	mg/L				0.01 U			0.01 U	
Copper	mg/L	0.01 U	0.01 U	0.01 U	0.015	0.01 U	0.011	0.01 U	0.01 U
Iron	mg/L	0.1 U	0.1	0.1 U	0.1 U	0.1 U	3.6	0.1 U	0.1 U
Lead	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.023	0.01 U	0.01 U
Magnesium	mg/L	1	1 U	1 U	25.1	1 U	1.1	22.7	1 U
Manganese	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Mercury	mg/L	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Molybdenum	mg/L	1.4	1.3	1	0.62	1.4	0.99	0.78	1.4
Nickel	mg/L	0.02	0.02	0.014	0.026	0.02	0.029	0.03	0.022
Potassium	mg/L	13.3	12.2	13.5	14.8	14.9	14.4	15.5	13
Selenium	mg/L	0.62	0.64	0.51	0.4	0.65	0.49	0.42	0.69
Silver	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Sodium	mg/L	990	949	724	618	949	627	568	955
Thallium	mg/L				0.01 U			0.01 U	
Vanadium	mg/L	0.38	0.42	0.29	0.12	0.59	0.46	0.22	0.62
Zinc	mg/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.048	0.02 U	0.02 U
Other									
Acidity, Total	mg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Alkalinity, Total as CaCO3	mg/L	246	290	115	86.3	216	120	91.2	247
Chloride	mg/L	265	254	176	309	277	155	293	254
Fluoride	mg/L	1.7	1.7	1.1	1.3	2	0.97	1.6	1.7
pH at 25 Degrees C	Std. Units	10.5	10.6	9.8	9.2	10.4	9.8	9.2	10.6
Sulfate	mg/L	1420	1630	1640	826	1410	1450	719	1610
Sulfide	mg/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Total Dissolved Solids	mg/L	3140	3020	2120	2290	3020	1870	2150	3060
Total Organic Carbon	mg/L	1.3	3.5	2.7	1.5	1	2.2	1.1	3.4
Initial pH	Std. Units	10.44							
Final pH	Std. Units	10.44	10.67	9.89	8.84	10.54	9.91	9	10.66

TABLE 1
LEACHATE SAMPLE RESULTS
CCR BENEFICIAL USE ASSESSMENT
AES/IPL PETERSBURG
PETERSBURG, INDIANA

Constituent	Units	Gypsum 18 hr 01/09/2018 50188189011	Gypsum 18 hr 10/03/2017 50181275011	Gypsum 18 hr 04/04/2018 50193927011	Gypsum 18 hr 07/11/2018 50201164007	Gypsum 30 Day 01/09/2018 50188189012	Gypsum 30 Day 04/04/2018 50193927012	Gypsum 30 Day 07/11/2018 50201164008	Gypsum 30 day 10/03/2017 50181275012
Inorganic Compounds									
Aluminum	mg/L	0.33	0.26	0.41	0.42	0.2 U	0.2 U	0.24	0.2 U
Antimony	mg/L				0.008 U			0.008 U	
Arsenic	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Barium	mg/L	0.026	0.025	0.027	0.024	0.024	0.023	0.022	0.021
Boron	mg/L	1.7	0.66	2.8	1.1	2.2	2.8	1.3	0.76
Cadmium	mg/L	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Chromium	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Cobalt	mg/L				0.01 U			0.01 U	
Copper	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Iron	mg/L	0.1 U	0.16	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Lead	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Magnesium	mg/L	11.9	3.9	16	8.2	16	16.5	9.6	5.1
Manganese	mg/L	0.029	0.01 U	0.13	0.03	0.01 U	0.11	0.01 U	0.01 U
Mercury	mg/L	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Molybdenum	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.012	0.01 U	0.01 U	0.01 U
Nickel	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Potassium	mg/L	1 U	1 U	1 U	1 U	1.1	1 U	1 U	1 U
Selenium	mg/L	0.015	0.015	0.012	0.017	0.02	0.012	0.022	0.019
Silver	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Sodium	mg/L	5.6	1.6	2.4	3	7.6	2.4	3.2	2.9
Thallium	mg/L				0.01 U			0.01 U	
Vanadium	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Zinc	mg/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Other									
Acidity, Total	mg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Alkalinity, Total as CaCO3	mg/L	15.3	7.2	10.3	7.8	16.8	13.6	9.6	10.2
Chloride	mg/L	6.1	2.9	12.4	5	7.2	11.4	5.1	3.1
Fluoride	mg/L	0.58	3.6	5.5	3.2	5	6.4	4.2	4.3
pH at 25 Degrees C	Std. Units	8	7.9	7.8	8.1	7.5	6.5	8	8
Sulfate	mg/L	1520	1530	1800	905	1740	1840	751	1550
Sulfide	mg/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Total Dissolved Solids	mg/L	2280	2170	2170	2260	2320	2220	2220	2210
Total Organic Carbon	mg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Initial pH	Std. Units	7.32							
Final pH	Std. Units	7.32	7.18	7.41	7.54	7.58	8.13	7.1	7.16

TABLE 1
LEACHATE SAMPLE RESULTS
CCR BENEFICIAL USE ASSESSMENT
AES/IPL PETERSBURG
PETERSBURG, INDIANA

Constituent	Units	WWTP Headworks 18 hr 07/11/2018 50201164019	WWTP Headworks 30 Day 07/11/2018 50201164020
Inorganic Compounds			
Aluminum	mg/L	0.62	0.2 U
Antimony	mg/L	0.008 U	0.008 U
Arsenic	mg/L	0.01 U	0.01 U
Barium	mg/L	0.029	0.024
Boron	mg/L	17.5	13.7
Cadmium	mg/L	0.002 U	0.002 U
Chromium	mg/L	0.01 U	0.01 U
Cobalt	mg/L	0.01 U	0.01 U
Copper	mg/L	0.01 U	0.01 U
Iron	mg/L	0.1 U	0.1 U
Lead	mg/L	0.01 U	0.01 U
Magnesium	mg/L	124	95.8
Manganese	mg/L	0.5	0.01 U
Mercury	mg/L	0.002 U	0.002 U
Molybdenum	mg/L	0.016	0.013
Nickel	mg/L	0.01 U	0.01 U
Potassium	mg/L	2.9	2.4
Selenium	mg/L	0.061	0.056
Silver	mg/L	0.01 U	0.01 U
Sodium	mg/L	27.9	21.6
Thallium	mg/L	0.01 U	0.01 U
Vanadium	mg/L	0.01 U	0.01 U
Zinc	mg/L	0.02 U	0.02 U
Other			
Acidity, Total	mg/L	10 U	17
Alkalinity, Total as CaCO3	mg/L	21.3	23.9
Chloride	mg/L	89	69.9
Fluoride	mg/L	7.8	7.8
pH at 25 Degrees C	Std. Units	8.2	7.5
Sulfate	mg/L	1040	868
Sulfide	mg/L	0.1 U	0.1 U
Total Dissolved Solids	mg/L	2940	2800
Total Organic Carbon	mg/L	1 U	1 U
Initial pH	Std. Units		
Final pH	Std. Units	8.04	7.73

TABLE 1
LEACHATE SAMPLE RESULTS
CCR BENEFICIAL USE ASSESSMENT
AES/IPL PETERSBURG

Notes:
Blank cells indicate constituent not analyzed.
CCR - Coal Combustion Residuals.
IUCS - IU Conversion Systems, Inc.
mg/L - milligrams per liter.
U - Constituent was not detected, value is the reporting limit.
WWT FGD - Wastewater Treatment Flue Gas Desulfurization.

Sampling results for antimony, cobalt, and thallium are available for the most recent sampling round only.

TABLE 2
SUMMARY OF LEACHATE ANALYTICAL RESULTS WITH COMPARISON TO DRINKING WATER AND SURFACE WATER SCREENING LEVELS -
BOTTOM ASH - 18 HOUR
CCR BENEFICIAL USE ASSESSMENT
AES/IPL PETERSBURG
PETERSBURG, INDIANA

Constituent	Units	Frequency of Detection	Range of Reporting Limits for Non-Detects	Range of Detected Concentrations	Average of All Samples	Selected HH DW SL (a) (mg/L)	Selected HH SW SL - Consumption of Organism Only (b) (mg/L)	Selected Eco SW SL - Acute (c) (mg/L)	Selected Eco SW SL - Chronic (c) (mg/L)	Max. or RL Exceeds Selected HH DW SL?	Max. or RL Exceeds Selected HH SW SL - Consumption of Organism Only?	Max. or RL Exceeds Selected Eco SW SL - Acute?	Max. or RL Exceeds Selected Eco SW SL - Chronic?
Inorganic Compounds													
Aluminum	mg/L	3 / 4	0.2 : 0.2	0.42 - 0.77	0.43	20	NA	NA	NA	No	NA	NA	NA
Antimony	mg/L	0 / 1	0.006 : 0.006		0.003	0.006	0.64	NA	NA	No	No	NA	NA
Arsenic	mg/L	2 / 4	0.01 : 0.01	0.016 - 0.025	0.013	0.01	0.000175	0.34	0.15	Yes	Yes	No	No
Barium	mg/L	3 / 4	0.01 : 0.01	0.01 - 0.027	0.016	2	NA	NA	NA	No	NA	NA	NA
Boron	mg/L	3 / 4	0.1 : 0.1	0.38 - 1.5	0.60	4	NA	NA	NA	No	NA	NA	NA
Cadmium	mg/L	0 / 4	0.002 : 0.002		0.001	0.005	NA	0.002	0.001	No	NA	RL	RL
Chromium	mg/L	0 / 4	0.01 : 0.01		0.005	0.1	NA	NA	NA	No	NA	NA	NA
Chromium (d)	mg/L	0 / 4	0.01 : 0.01		0.005	0.00035	NA	0.02	0.01	RL	NA	No	No
Cobalt	mg/L	0 / 1	0.01 : 0.01		0.005	0.006	NA	NA	NA	RL	NA	NA	NA
Copper	mg/L	0 / 4	0.01 : 0.01		0.005	1.3	NA	0.01	0.01	No	NA	No	RL
Iron	mg/L	2 / 4	0.1 : 0.1	0.12 - 0.29	0.13	14	NA	NA	1	No	NA	NA	No
Lead	mg/L	0 / 4	0.01 : 0.01		0.005	0.015	NA	0.10	0.01	No	NA	No	RL
Magnesium	mg/L	3 / 4	1 : 1	1.3 - 4.2	2.1	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/L	2 / 4	0.01 : 0.01	0.012 - 0.048	0.018	0.43	0.1	NA	NA	No	No	NA	NA
Mercury	mg/L	0 / 4	0.002 : 0.002		0.001	0.002	0.00015	0.001	0.001	No	RL	RL	RL
Molybdenum	mg/L	1 / 4	0.01 : 0.01	0.03 - 0.03	0.01	0.1	NA	NA	NA	No	NA	NA	NA
Nickel	mg/L	0 / 4	0.01 : 0.01		0.005	0.39	4.6	0.47	0.05	No	No	No	No
Potassium	mg/L	0 / 4	1 : 1		0.5	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/L	1 / 4	0.01 : 0.01	0.01 - 0.01	0.006	0.05	4.2	NA	0.003	No	No	NA	Yes
Silver	mg/L	0 / 4	0.01 : 0.01		0.005	0.094	NA	0.003	NA	No	NA	RL	NA
Sodium	mg/L	3 / 4	1 : 1	1.1 - 10.4	3.3	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/L	0 / 1	0.01 : 0.01		0.005	0.002	0.048	NA	NA	RL	No	NA	NA
Vanadium	mg/L	0 / 4	0.01 : 0.01		0.005	0.086	NA	NA	NA	No	NA	NA	NA
Zinc	mg/L	0 / 4	0.02 : 0.02		0.01	6	26	0.12	0.12	No	No	No	No
Other													
Acidity, Total	mg/L	0 / 4	10 : 10		5.0	NA	NA	NA	NA	NA	NA	NA	NA
Alkalinity, Total as CaCO3	mg/L	4 / 4		8.6 - 15.8	11.5	NA	NA	NA	NA	NA	NA	NA	NA
Chloride	mg/L	2 / 4	1 : 1	1.8 - 3.4	1.6	250	NA	860	230	No	NA	No	No
Fluoride	mg/L	3 / 4	0.1 : 0.1	0.32 - 3.3	1.1	0.8	NA	NA	NA	Yes	NA	NA	NA
pH at 25 Degrees C	Std. Units	4 / 4		7.6 - 9	8.2	NA	NA	NA	6.5-9	NA	NA	NA	No
Sulfate	mg/L	4 / 4		20.1 - 1810	541	250	NA	NA	NA	Yes	NA	NA	NA
Sulfide	mg/L	0 / 4	0.1 : 0.1		0.05	NA	NA	NA	NA	NA	NA	NA	NA
Total Dissolved Solids	mg/L	4 / 4		24 - 2210	689	500	NA	NA	NA	Yes	NA	NA	NA
Total Organic Carbon	mg/L	0 / 4	1 : 1		0.5	NA	NA	NA	NA	NA	NA	NA	NA
Initial pH	Std. Units	1 / 1		6.9 - 6.9	6.9	NA	NA	NA	6.5-9	NA	NA	NA	No
Final pH	Std. Units	4 / 4		6.9 - 8.52	7.6	NA	NA	NA	6.5-9	NA	NA	NA	No

Notes:
CCR - Coal Combustion Residuals.
CCC HLSC - Continuous Criterion Concentration. Human Life-Cycle Safe Concentration.
DW - Drinking Water.
Eco - Ecological.
IDEM - Indiana Department of Environmental Management.
HH - Human Health.
Max. - Maximum Detected Concentration.
mg/L - milligram per liter.
MPL - Maximum Permissible Level.
NA - Not Available/Not Applicable.
NRWQC - National Recommended Water Quality Criteria.
RL - Reporting Limit.
RSL - Risk Based Screening Level.
SL - Screening Level.
SW - Surface Water.
USEPA - United States Environmental Protection Agency.

- Concentration is below screening level.
- Concentration is above screening level.
- Reporting limit is above screening level.

(a) - The hierarchy for selection among the Human Health Screening Levels for Drinking Water, as shown in Table 7-2, is:
1) IDEM Groundwater Tap Residential.
2) IDEM MPL.
3) USEPA RSL - Tap Water.
(b) - The hierarchy for selection among the Human Health Screening Levels for Surface Water - Consumption of Organism Only, as shown in Table 7-2, is:
1) IDEM CCC HLSC - Consumption of Organism Only (proposed).
2) IDEM CCC HLSC - Consumption of Organism Only (current).
3) USEPA NRWQC - Consumption of Organism Only.
(c) - The hierarchy for the selection of ecological screening levels, as shown in Table 7-3, is:
1) IDEM Aquatic Life Criterion (proposed).
2) IDEM Aquatic Life Criterion (current).
3) USEPA NRWQC. Aquatic Life Criteria - Freshwater.
(d) - Chromium screened as both Total Chromium and Hexavalent Chromium to be conservative.

TABLE 3
SUMMARY OF LEACHATE ANALYTICAL RESULTS WITH COMPARISON TO DRINKING WATER AND SURFACE WATER SCREENING LEVELS -
BOTTOM ASH - 30 DAY
CCR BENEFICIAL USE ASSESSMENT
AES/IPL PETERSBURG
PETERSBURG, INDIANA

Constituent	Units	Frequency of Detection	Range of Reporting Limits for Non-Detects	Range of Detected Concentrations	Average of All Samples	Selected HH DW SL (a) (mg/L)	Selected HH SW SL - Consumption of Organism Only (b) (mg/L)	Selected Eco SW SL - Acute (c) (mg/L)	Selected Eco SW SL - Chronic (c) (mg/L)	Max. or RL Exceeds Selected HH DW SL?	Max. or RL Exceeds Selected HH SW SL - Consumption of Organism Only?	Max. or RL Exceeds Selected Eco SW SL - Acute?	Max. or RL Exceeds Selected Eco SW SL - Chronic?
Inorganic Compounds													
Aluminum	mg/L	3 / 4	0.2 : 0.2	0.31 - 2.2	0.73	20	NA	NA	NA	No	NA	NA	NA
Antimony	mg/L	0 / 1	0.008 : 0.008		0.004	0.006	0.64	NA	NA	RL	No	NA	NA
Arsenic	mg/L	1 / 4	0.01 : 0.01	0.013 - 0.013	0.007	0.01	0.000175	0.34	0.15	Yes	Yes	No	No
Barium	mg/L	3 / 4	0.01 : 0.01	0.024 - 0.038	0.023	2	NA	NA	NA	No	NA	NA	NA
Boron	mg/L	4 / 4		0.22 - 1.7	0.84	4	NA	NA	NA	No	NA	NA	NA
Cadmium	mg/L	0 / 4	0.002 : 0.002		0.001	0.005	NA	0.002	0.001	No	NA	RL	RL
Chromium	mg/L	0 / 4	0.01 : 0.01		0.005	0.1	NA	NA	NA	No	NA	NA	NA
Chromium (d)	mg/L		0.01 : 0.01		0.005	0.00035	NA	0.02	0.01	RL	NA	No	No
Cobalt	mg/L	0 / 1	0.01 : 0.01		0.005	0.006	NA	NA	NA	RL	NA	NA	NA
Copper	mg/L	0 / 4	0.01 : 0.01		0.005	1.3	NA	0.01	0.01	No	NA	No	RL
Iron	mg/L	4 / 4		0.33 - 3.6	1.2	14	NA	NA	1	No	NA	NA	Yes
Lead	mg/L	0 / 4	0.01 : 0.01		0.005	0.015	NA	0.10	0.01	No	NA	No	RL
Magnesium	mg/L	4 / 4		1.2 - 6.9	3.8	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/L	4 / 4		0.012 - 0.053	0.030	0.43	0.1	NA	NA	No	No	NA	NA
Mercury	mg/L	0 / 4	0.002 : 0.002		0.001	0.002	0.00015	0.001	0.001	No	RL	RL	RL
Molybdenum	mg/L	4 / 4		0.013 - 0.042	0.023	0.1	NA	NA	NA	No	NA	NA	NA
Nickel	mg/L	1 / 4	0.01 : 0.01	0.021 - 0.021	0.009	0.39	4.6	0.47	0.05	No	No	No	No
Potassium	mg/L	4 / 4		1.9 - 2.9	2.4	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/L	1 / 4	0.01 : 0.01	0.017 - 0.017	0.008	0.05	4.2	NA	0.003	No	No	NA	Yes
Silver	mg/L	0 / 4	0.01 : 0.01		0.005	0.094	NA	0.003	NA	No	NA	RL	NA
Sodium	mg/L	3 / 4	1 : 1	2.1 - 11.7	4.1	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/L	0 / 1	0.01 : 0.01		0.005	0.002	0.048	NA	NA	RL	No	NA	NA
Vanadium	mg/L	1 / 4	0.01 : 0.01	0.011 - 0.011	0.0065	0.086	NA	NA	NA	No	NA	NA	NA
Zinc	mg/L	0 / 4	0.02 : 0.02		0.01	6	26	0.12	0.12	No	No	No	No
Other													
Acidity, Total	mg/L	0 / 4	10 : 10		5.0	NA	NA	NA	NA	NA	NA	NA	NA
Alkalinity, Total as CaCO3	mg/L	4 / 4		14.1 - 25.7	20.9	NA	NA	NA	NA	NA	NA	NA	NA
Chloride	mg/L	2 / 4	1 : 1	2.2 - 4.1	1.8	250	NA	860	230	No	NA	No	No
Fluoride	mg/L	3 / 4	0.1 : 0.1	0.4 - 4	2.1	0.8	NA	NA	NA	Yes	NA	NA	NA
pH at 25 Degrees C	Std. Units	4 / 4		7.1 - 7.8	7.5	NA	NA	NA	6.5-9	NA	NA	NA	No
Sulfate	mg/L	4 / 4		39.6 - 1830	532	250	NA	NA	NA	Yes	NA	NA	NA
Sulfide	mg/L	0 / 4	0.1 : 0.1		0.05	NA	NA	NA	NA	NA	NA	NA	NA
Total Dissolved Solids	mg/L	4 / 4		70 - 2270	689	500	NA	NA	NA	Yes	NA	NA	NA
Total Organic Carbon	mg/L	0 / 4	1 : 1		0.5	NA	NA	NA	NA	NA	NA	NA	NA
Final pH	Std. Units	4 / 4		7.08 - 8.17	7.56	NA	NA	NA	6.5-9	NA	NA	NA	No

Notes:
CCR - Coal Combustion Residuals.
CCC HLSC - Continuous Criterion Concentration. Human Life-Cycle Safe Concentration.
DW - Drinking Water.
Eco - Ecological.
IDEM - Indiana Department of Environmental Management.
HH - Human Health.
Max. - Maximum Detected Concentration.
mg/L - milligram per liter.
MPL - Maximum Permissible Level.
NA - Not Available/Not Applicable.
NRWQC - National Recommended Water Quality Criteria.
RL - Reporting Limit.
RSL - Risk Based Screening Level.
SL - Screening Level.
SW - Surface Water.
USEPA - United States Environmental Protection Agency.

- Concentration is below screening level.
- Concentration is above screening level.
- Reporting limit is above screening level.

(a) - The hierarchy for selection among the Human Health Screening Levels for Drinking Water, as shown in Table 7-2, is:
1) IDEM Groundwater Tap Residential.
2) IDEM MPL.
3) USEPA RSL - Tap Water.
(b) - The hierarchy for selection among the Human Health Screening Levels for Surface Water - Consumption of Organism Only, as shown in Table 7-2, is:
1) IDEM CCC HLSC - Consumption of Organism Only (proposed).
2) IDEM CCC HLSC - Consumption of Organism Only (current).
3) USEPA NRWQC - Consumption of Organism Only.
(c) - The hierarchy for the selection of ecological screening levels, as shown in Table 7-3, is:
1) IDEM Aquatic Life Criterion (proposed).
2) IDEM Aquatic Life Criterion (current).
3) USEPA NRWQC. Aquatic Life Criteria - Freshwater.
(d) - Chromium screened as both Total Chromium and Hexavalent Chromium to be conservative.

TABLE 4
SUMMARY OF LEACHATE ANALYTICAL RESULTS WITH COMPARISON TO DRINKING WATER AND SURFACE WATER SCREENING LEVELS -
FLY ASH - 18 HOUR
CCR BENEFICIAL USE ASSESSMENT
AES/IPL PETERSBURG
PETERSBURG, INDIANA

Constituent	Units	Frequency of Detection	Range of Reporting Limits for Non-Detects	Range of Detected Concentrations	Average of All Samples	Selected HH DW SL (a) (mg/L)	Selected HH SW SL - Consumption of Organism Only (b) (mg/L)	Selected Eco SW SL - Acute (c) (mg/L)	Selected Eco SW SL - Chronic (c) (mg/L)	Max. or RL Exceeds Selected HH DW SL?	Max. or RL Exceeds Selected HH SW SL - Consumption of Organism Only?	Max. or RL Exceeds Selected Eco SW SL - Acute?	Max. or RL Exceeds Selected Eco SW SL - Chronic?
Inorganic Compounds													
Aluminum	mg/L	4 / 4		1.1 - 5.8	3.8	20	NA	NA	NA	No	NA	NA	NA
Antimony	mg/L	1 / 1		0.021 - 0.021	0.021	0.006	0.64	NA	NA	Yes	No	NA	NA
Arsenic	mg/L	4 / 4		0.49 - 1.9	1.4	0.01	0.000175	0.34	0.15	Yes	Yes	Yes	Yes
Barium	mg/L	2 / 4	0.01 : 0.01	0.012 - 0.02	0.011	2	NA	NA	NA	No	NA	NA	NA
Boron	mg/L	4 / 4		8.5 - 24.1	13.4	4	NA	NA	NA	Yes	NA	NA	NA
Cadmium	mg/L	1 / 4	0.002 : 0.01	0.0046 - 0.0046	0.0029	0.005	NA	0.002	0.001	RL	NA	Yes	Yes
Chromium	mg/L	3 / 4	0.01 : 0.01	0.021 - 0.025	0.019	0.1	NA	NA	NA	No	NA	NA	NA
Chromium (d)	mg/L	3 / 4	0.01 : 0.01	0.021 - 0.025	0.019	0.00035	NA	0.02	0.01	Yes	NA	Yes	Yes
Cobalt	mg/L	0 / 1	0.01 : 0.01		0.005	0.006	NA	NA	NA	RL	NA	NA	NA
Copper	mg/L	1 / 4	0.01 : 0.01	0.015 - 0.015	0.008	1.3	NA	0.01	0.01	No	NA	Yes	Yes
Iron	mg/L	1 / 4	0.1 : 0.1	0.1 - 0.1	0.06	14	NA	NA	1	No	NA	NA	No
Lead	mg/L	0 / 4	0.01 : 0.01		0.005	0.015	NA	0.10	0.01	No	NA	No	RL
Magnesium	mg/L	2 / 4	1 : 1	1 - 25.1	7	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/L	0 / 4	0.01 : 0.01		0.01	0.43	0.1	NA	NA	No	No	NA	NA
Mercury	mg/L	0 / 4	0.002 : 0.002		0.001	0.002	0.00015	0.001	0.001	No	RL	RL	RL
Molybdenum	mg/L	4 / 4		0.62 - 1.4	1.1	0.1	NA	NA	NA	Yes	NA	NA	NA
Nickel	mg/L	4 / 4		0.014 - 0.026	0.020	0.39	4.6	0.47	0.05	No	No	No	No
Potassium	mg/L	4 / 4		12.2 - 14.8	13.5	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/L	4 / 4		0.4 - 0.64	0.5	0.05	4.2	NA	0.003	Yes	No	NA	Yes
Silver	mg/L	0 / 4	0.01 : 0.01		0.005	0.094	NA	0.003	NA	No	NA	RL	NA
Sodium	mg/L	4 / 4		618 - 990	820	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/L	0 / 1	0.01 : 0.01		0.005	0.002	0.048	NA	NA	RL	No	NA	NA
Vanadium	mg/L	4 / 4		0.12 - 0.42	0.30	0.086	NA	NA	NA	Yes	NA	NA	NA
Zinc	mg/L	0 / 4	0.02 : 0.02		0.01	6	26	0.12	0.12	No	No	No	No
Other													
Acidity, Total	mg/L	0 / 4	10 : 10		5	NA	NA	NA	NA	NA	NA	NA	NA
Alkalinity, Total as CaCO3	mg/L	4 / 4		86.3 - 290	184	NA	NA	NA	NA	NA	NA	NA	NA
Chloride	mg/L	4 / 4		176 - 309	251	250	NA	860	230	Yes	NA	No	Yes
Fluoride	mg/L	4 / 4		1.1 - 1.7	1.5	0.8	NA	NA	NA	Yes	NA	NA	NA
pH at 25 Degrees C	Std. Units	4 / 4		9.2 - 10.6	10	NA	NA	NA	6.5-9	NA	NA	NA	Yes
Sulfate	mg/L	4 / 4		826 - 1640	1379	250	NA	NA	NA	Yes	NA	NA	NA
Sulfide	mg/L	0 / 4	0.1 : 0.1		0.05	NA	NA	NA	NA	NA	NA	NA	NA
Total Dissolved Solids	mg/L	4 / 4		2120 - 3140	2643	500	NA	NA	NA	Yes	NA	NA	NA
Total Organic Carbon	mg/L	4 / 4		1.3 - 3.5	2.3	NA	NA	NA	NA	NA	NA	NA	NA
Initial pH	Std. Units	1 / 1		10.44 - 10.44	10.44	NA	NA	NA	6.5-9	NA	NA	NA	Yes
Final pH	Std. Units	4 / 4		8.84 - 10.67	9.96	NA	NA	NA	6.5-9	NA	NA	NA	Yes

Notes:
CCR - Coal Combustion Residuals.
CCC HLSC - Continuous Criterion Concentration. Human Life-Cycle Safe Concentration.
DW - Drinking Water.
Eco - Ecological.
IDEM - Indiana Department of Environmental Management.
HH - Human Health.
Max. - Maximum Detected Concentration.
mg/L - milligram per liter.
MPL - Maximum Permissible Level.
NA - Not Available/Not Applicable.
NRWQC - National Recommended Water Quality Criteria.
RL - Reporting Limit.
RSL - Risk Based Screening Level.
SL - Screening Level.
SW - Surface Water.
USEPA - United States Environmental Protection Agency.

- Concentration is below screening level.
- Concentration is above screening level.
- Reporting limit is above screening level.

(a) - The hierarchy for selection among the Human Health Screening Levels for Drinking Water, as shown in Table 7-2, is:
1) IDEM Groundwater Tap Residential.
2) IDEM MPL.
3) USEPA RSL - Tap Water.
(b) - The hierarchy for selection among the Human Health Screening Levels for Surface Water - Consumption of Organism Only, as shown in Table 7-2, is:
1) IDEM CCC HLSC - Consumption of Organism Only (proposed).
2) IDEM CCC HLSC - Consumption of Organism Only (current).
3) USEPA NRWQC - Consumption of Organism Only.
(c) - The hierarchy for the selection of ecological screening levels, as shown in Table 7-3, is:
1) IDEM Aquatic Life Criterion (proposed).
2) IDEM Aquatic Life Criterion (current).
3) USEPA NRWQC. Aquatic Life Criteria - Freshwater.
(d) - Chromium screened as both Total Chromium and Hexavalent Chromium to be conservative.

TABLE 5
SUMMARY OF LEACHATE ANALYTICAL RESULTS WITH COMPARISON TO DRINKING WATER AND SURFACE WATER SCREENING LEVELS -
FLY ASH - 30 DAY
CCR BENEFICIAL USE ASSESSMENT
AES/IPL PETERSBURG
PETERSBURG, INDIANA

Constituent	Units	Frequency of Detection	Range of Reporting Limits for Non-Detects	Range of Detected Concentrations	Average of All Samples	Selected HH DW SL (a) (mg/L)	Selected HH SW SL - Consumption of Organism Only (b) (mg/L)	Selected Eco SW SL - Acute (c) (mg/L)	Selected Eco SW SL - Chronic (c) (mg/L)	Max. or RL Exceeds Selected HH DW SL?	Max. or RL Exceeds Selected HH SW SL - Consumption of Organism Only?	Max. or RL Exceeds Selected Eco SW SL - Acute?	Max. or RL Exceeds Selected Eco SW SL - Chronic?
Inorganic Compounds													
Aluminum	mg/L	4 / 4		1 - 8.9	5	20	NA	NA	NA	No	NA	NA	NA
Antimony	mg/L	1 / 1		0.035 - 0.035	0.035	0.006	0.64	NA	NA	Yes	No	NA	NA
Arsenic	mg/L	4 / 4		0.7 - 2.2	1.8	0.01	0.000175	0.34	0.15	Yes	Yes	Yes	Yes
Barium	mg/L	4 / 4		0.014 - 0.036	0.025	2	NA	NA	NA	No	NA	NA	NA
Boron	mg/L	4 / 4		8.6 - 24	14.2	4	NA	NA	NA	Yes	NA	NA	NA
Cadmium	mg/L	2 / 4	0.002 : 0.01	0.0021 - 0.0024	0.0026	0.005	NA	0.002	0.001	RL	NA	Yes	Yes
Chromium	mg/L	4 / 4		0.012 - 0.034	0.028	0.1	NA	NA	NA	No	NA	NA	NA
Chromium (d)	mg/L	4 / 4		0.012 - 0.034	0.028	0.00035	NA	0.02	0.01	Yes	NA	Yes	Yes
Cobalt	mg/L	0 / 1	0.01 : 0.01		0.005	0.006	NA	NA	NA	RL	NA	NA	NA
Copper	mg/L	1 / 4	0.01 : 0.01	0.011 - 0.011	0.007	1.3	NA	0.01	0.01	No	NA	No	Yes
Iron	mg/L	1 / 4	0.1 : 0.1	3.6 - 3.6	0.9375	14	NA	NA	1	No	NA	NA	Yes
Lead	mg/L	1 / 4	0.01 : 0.01	0.023 - 0.023	0.010	0.015	NA	0.10	0.01	Yes	NA	No	Yes
Magnesium	mg/L	2 / 4	1 : 1	1.1 - 22.7	6.2	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/L	0 / 4	0.01 : 0.01		0.01	0.43	NA	NA	NA	No	No	NA	NA
Mercury	mg/L	0 / 4	0.002 : 0.002		0.001	0.002	0.00015	0.001	0.001	No	RL	RL	RL
Molybdenum	mg/L	4 / 4		0.78 - 1.4	1.1	0.1	NA	NA	NA	Yes	NA	NA	NA
Nickel	mg/L	4 / 4		0.02 - 0.03	0.03	0.39	4.6	0.47	0.05	No	No	No	No
Potassium	mg/L	4 / 4		13 - 15.5	14	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/L	4 / 4		0.42 - 0.69	0.56	0.05	4.2	NA	0.003	Yes	No	NA	Yes
Silver	mg/L	0 / 4	0.01 : 0.01		0.01	0.094	NA	0.003	NA	No	NA	RL	NA
Sodium	mg/L	4 / 4		568 - 955	775	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/L	0 / 1	0.01 : 0.01		0.01	0.002	0.048	NA	NA	RL	No	NA	NA
Vanadium	mg/L	4 / 4		0.22 - 0.62	0.47	0.086	NA	NA	NA	Yes	NA	NA	NA
Zinc	mg/L	1 / 4	0.02 : 0.02	0.048 - 0.048	0.020	6	26	0.12	0.12	No	No	No	No
Other													
Acidity, Total	mg/L	0 / 4	10 : 10		5	NA	NA	NA	NA	NA	NA	NA	NA
Alkalinity, Total as CaCO3	mg/L	4 / 4		91.2 - 247	169	NA	NA	NA	NA	NA	NA	NA	NA
Chloride	mg/L	4 / 4		155 - 293	245	250	NA	860	230	Yes	NA	No	Yes
Fluoride	mg/L	4 / 4		0.97 - 2	1.6	0.8	NA	NA	NA	Yes	NA	NA	NA
pH at 25 Degrees C	Std. Units	4 / 4		9.2 - 10.6	10	NA	NA	NA	6.5-9	NA	NA	NA	Yes
Sulfate	mg/L	4 / 4		719 - 1610	1297	250	NA	NA	NA	Yes	NA	NA	NA
Sulfide	mg/L	0 / 4	0.1 : 0.1		0.1	NA	NA	NA	NA	NA	NA	NA	NA
Total Dissolved Solids	mg/L	4 / 4		1870 - 3060	2525	500	NA	NA	NA	Yes	NA	NA	NA
Total Organic Carbon	mg/L	4 / 4		1 - 3.4	1.9	NA	NA	NA	NA	NA	NA	NA	NA
Final pH	Std. Units	4 / 4		9 - 10.66	10	NA	NA	NA	6.5-9	NA	NA	NA	Yes

Notes:
CCR - Coal Combustion Residuals.
CCC HLSC - Continuous Criterion Concentration. Human Life-Cycle Safe Concentration.
DW - Drinking Water.
Eco - Ecological.
IDEM - Indiana Department of Environmental Management.
HH - Human Health.
Max. - Maximum Detected Concentration.
mg/L - milligram per liter.
MPL - Maximum Permissible Level.
NA - Not Available/Not Applicable..
NRWQC - National Recommended Water Quality Criteria.
RL - Reporting Limit.
RSL - Risk Based Screening Level.
SL - Screening Level.
SW - Surface Water.
USEPA - United States Environmental Protection Agency.

- Concentration is below screening level.
- Concentration is above screening level.
- Reporting limit is above screening level.

(a) - The hierarchy for selection among the Human Health Screening Levels for Drinking Water, as shown in Table 7-2, is:
1) IDEM Groundwater Tap Residential.
2) IDEM MPL.
3) USEPA RSL - Tap Water.
(b) - The hierarchy for selection among the Human Health Screening Levels for Surface Water - Consumption of Organism Only, as shown in Table 7-2, is:
1) IDEM CCC HLSC - Consumption of Organism Only (proposed).
2) IDEM CCC HLSC - Consumption of Organism Only (current).
3) USEPA NRWQC - Consumption of Organism Only.
(c) - The hierarchy for the selection of ecological screening levels, as shown in Table 7-3, is:
1) IDEM Aquatic Life Criterion (proposed).
2) IDEM Aquatic Life Criterion (current).
3) USEPA NRWQC. Aquatic Life Criteria - Freshwater.
(d) - Chromium screened as both Total Chromium and Hexavalent Chromium to be conservative.

TABLE 6
SUMMARY OF LEACHATE ANALYTICAL RESULTS WITH COMPARISON TO DRINKING WATER AND SURFACE WATER SCREENING LEVELS -
GYPSUM - 18 HOUR
CCR BENEFICIAL USE ASSESSMENT
AES/IPL PETERSBURG
PETERSBURG, INDIANA

Constituent	Units	Frequency of Detection	Range of Reporting Limits for Non-Detects	Range of Detected Concentrations	Average of All Samples	Selected HH DW SL (a) (mg/L)	Selected HH SW SL - Consumption of Organism Only (b) (mg/L)	Selected Eco SW SL - Acute (c) (mg/L)	Selected Eco SW SL - Chronic (c) (mg/L)	Max. or RL Exceeds Selected HH DW SL?	Max. or RL Exceeds Selected HH SW SL - Consumption of Organism Only?	Max. or RL Exceeds Selected Eco SW SL - Acute?	Max. or RL Exceeds Selected Eco SW SL - Chronic?
Inorganic Compounds													
Aluminum	mg/L	4 / 4		0.26 - 0.42	0.36	20	NA	NA	NA	No	NA	NA	NA
Antimony	mg/L	0 / 1	0.008 : 0.008		0.004	0.006	0.64	NA	NA	RL	No	NA	NA
Arsenic	mg/L	0 / 4	0.01 : 0.01		0.005	0.01	0.000175	0.34	0.15	No	RL	No	No
Barium	mg/L	4 / 4		0.024 - 0.027	0.026	2	NA	NA	NA	No	NA	NA	NA
Boron	mg/L	4 / 4		0.66 - 2.8	1.6	4	NA	NA	NA	No	NA	NA	NA
Cadmium	mg/L	0 / 4	0.002 : 0.002		0.001	0.005	NA	0.002	0.001	No	NA	RL	RL
Chromium	mg/L	0 / 4	0.01 : 0.01		0.01	0.1	NA	NA	NA	No	NA	NA	NA
Chromium (d)	mg/L	0 / 4	0.01 : 0.01		0.01	0.00035	NA	0.02	0.01	RL	NA	No	No
Cobalt	mg/L	0 / 1	0.01 : 0.01		0.01	0.006	NA	NA	NA	RL	NA	NA	NA
Copper	mg/L	0 / 4	0.01 : 0.01		0.01	1.3	NA	0.01	0.01	No	NA	No	RL
Iron	mg/L	1 / 4	0.1 : 0.1	0.16 - 0.16	0.08	14	NA	NA	1	No	NA	NA	No
Lead	mg/L	0 / 4	0.01 : 0.01		0.01	0.015	NA	0.10	0.01	No	NA	No	RL
Magnesium	mg/L	4 / 4		3.9 - 16	10	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/L	3 / 4	0.01 : 0.01	0.029 - 0.13	0.05	0.43	0.1	NA	NA	No	Yes	NA	NA
Mercury	mg/L	0 / 4	0.002 : 0.002		0.001	0.002	0.00015	0.001	0.001	No	RL	RL	RL
Molybdenum	mg/L	0 / 4	0.01 : 0.01		0.01	0.1	NA	NA	NA	No	NA	NA	NA
Nickel	mg/L	0 / 4	0.01 : 0.01		0.01	0.39	4.6	0.47	0.05	No	No	No	No
Potassium	mg/L	0 / 4	1 : 1		0.5	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/L	4 / 4		0.012 - 0.017	0.015	0.05	4.2	NA	0.003	No	No	NA	Yes
Silver	mg/L	0 / 4	0.01 : 0.01		0.01	0.094	NA	0.003	NA	No	NA	RL	NA
Sodium	mg/L	4 / 4		1.6 - 5.6	3.2	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/L	0 / 1	0.01 : 0.01		0.01	0.002	0.048	NA	NA	RL	No	NA	NA
Vanadium	mg/L	0 / 4	0.01 : 0.01		0.01	0.086	NA	NA	NA	No	NA	NA	NA
Zinc	mg/L	0 / 4	0.02 : 0.02		0.01	6	26	0.12	0.12	No	No	No	No
Other													
Acidity, Total	mg/L	0 / 4	10 : 10		5	NA	NA	NA	NA	NA	NA	NA	NA
Alkalinity, Total as CaCO3	mg/L	4 / 4		7.2 - 15.3	10	NA	NA	NA	NA	NA	NA	NA	NA
Chloride	mg/L	4 / 4		2.9 - 12.4	6.6	250	NA	860	230	No	NA	No	No
Fluoride	mg/L	4 / 4		0.58 - 5.5	3.2	0.8	NA	NA	NA	Yes	NA	NA	NA
pH at 25 Degrees C	Std. Units	4 / 4		7.8 - 8.1	8.0	NA	NA	NA	6.5-9	NA	NA	NA	No
Sulfate	mg/L	4 / 4		905 - 1800	1439	250	NA	NA	NA	Yes	NA	NA	NA
Sulfide	mg/L	0 / 4	0.1 : 0.1		0.05	NA	NA	NA	NA	NA	NA	NA	NA
Total Dissolved Solids	mg/L	4 / 4		2170 - 2280	2220	500	NA	NA	NA	Yes	NA	NA	NA
Total Organic Carbon	mg/L	0 / 4	1 : 1		0.5	NA	NA	NA	NA	NA	NA	NA	NA
Initial pH	Std. Units	1 / 1		7.32 - 7.32	7.32	NA	NA	NA	6.5-9	NA	NA	NA	No
Final pH	Std. Units	4 / 4		7.18 - 7.54	7.36	NA	NA	NA	6.5-9	NA	NA	NA	No

Notes:
CCR - Coal Combustion Residuals.
CCC HLSC - Continuous Criterion Concentration. Human Life-Cycle Safe Concentration.
DW - Drinking Water.
Eco - Ecological.
IDEM - Indiana Department of Environmental Management.
HH - Human Health.
Max. - Maximum Detected Concentration.
mg/L - milligram per liter.
MPL - Maximum Permissible Level.
NA - Not Available/Not Applicable.
NRWQC - National Recommended Water Quality Criteria.
RL - Reporting Limit.
RSL - Risk Based Screening Level.
SL - Screening Level.
SW - Surface Water.
USEPA - United States Environmental Protection Agency.

- Concentration is below screening level.
- Concentration is above screening level.
- Reporting limit is above screening level.

(a) - The hierarchy for selection among the Human Health Screening Levels for Drinking Water, as shown in Table 7-2, is:
1) IDEM Groundwater Tap Residential.
2) IDEM MPL.
3) USEPA RSL - Tap Water.
(b) - The hierarchy for selection among the Human Health Screening Levels for Surface Water - Consumption of Organism Only, as shown in Table 7-2, is:
1) IDEM CCC HLSC - Consumption of Organism Only (proposed).
2) IDEM CCC HLSC - Consumption of Organism Only (current).
3) USEPA NRWQC - Consumption of Organism Only.
(c) - The hierarchy for the selection of ecological screening levels, as shown in Table 7-3, is:
1) IDEM Aquatic Life Criterion (proposed).
2) IDEM Aquatic Life Criterion (current).
3) USEPA NRWQC. Aquatic Life Criteria - Freshwater.
(d) - Chromium screened as both Total Chromium and Hexavalent Chromium to be conservative.

TABLE 7
SUMMARY OF LEACHATE ANALYTICAL RESULTS WITH COMPARISON TO DRINKING WATER AND SURFACE WATER SCREENING LEVELS - GYPSUM - 30 DAY
CCR BENEFICIAL USE ASSESSMENT
AES/IPL PETERSBURG
PETERSBURG, INDIANA

Constituent	Units	Frequency of Detection	Range of Reporting Limits for Non-Detects	Range of Detected Concentrations	Average of All Samples	Selected HH DW SL (a) (mg/L)	Selected HH SW SL - Consumption of Organism Only (b) (mg/L)	Selected Eco SW SL - Acute (c) (mg/L)	Selected Eco SW SL - Chronic (c) (mg/L)	Max. or RL Exceeds Selected HH DW SL?	Max. or RL Exceeds Selected HH SW SL - Consumption of Organism Only?	Max. or RL Exceeds Selected Eco SW SL - Acute?	Max. or RL Exceeds Selected Eco SW SL - Chronic?
Inorganic Compounds													
Aluminum	mg/L	1 / 4	0.2 : 0.2	0.24 - 0.24	0.14	20	NA	NA	NA	No	NA	NA	NA
Antimony	mg/L	0 / 1	0.008 : 0.008		0.004	0.006	0.64	NA	NA	RL	No	NA	NA
Arsenic	mg/L	0 / 4	0.01 : 0.01		0.01	0.01	0.000175	0.34	0.15	No	RL	No	No
Barium	mg/L	4 / 4		0.021 - 0.024	0.023	2	NA	NA	NA	No	NA	NA	NA
Boron	mg/L	4 / 4		0.76 - 2.8	1.8	4	NA	NA	NA	No	NA	NA	NA
Cadmium	mg/L	0 / 4	0.002 : 0.002		0.001	0.005	NA	0.002	0.001	No	NA	RL	RL
Chromium	mg/L	0 / 4	0.01 : 0.01		0.01	0.1	NA	NA	NA	No	NA	NA	NA
Chromium (d)	mg/L	0 / 4	0.01 : 0.01		0.01	0.00035	NA	0.02	0.01	RL	NA	No	No
Cobalt	mg/L	0 / 1	0.01 : 0.01		0.01	0.006	NA	NA	NA	RL	NA	NA	NA
Copper	mg/L	0 / 4	0.01 : 0.01		0.01	1.3	NA	0.01	0.01	No	NA	No	RL
Iron	mg/L	0 / 4	0.1 : 0.1		0.1	14	NA	NA	1	No	NA	NA	No
Lead	mg/L	0 / 4	0.01 : 0.01		0.01	0.015	NA	0.10	0.01	No	NA	No	RL
Magnesium	mg/L	4 / 4		5.1 - 16.5	11.8	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/L	1 / 4	0.01 : 0.01	0.11 - 0.11	0.03	0.43	0.1	NA	NA	No	Yes	NA	NA
Mercury	mg/L	0 / 4	0.002 : 0.002		0.001	0.002	0.00015	0.001	0.001	No	RL	RL	RL
Molybdenum	mg/L	1 / 4	0.01 : 0.01	0.012 - 0.012	0.007	0.1	NA	NA	NA	No	NA	NA	NA
Nickel	mg/L	0 / 4	0.01 : 0.01		0.01	0.39	4.6	0.47	0.05	No	No	No	No
Potassium	mg/L	1 / 4	1 : 1	1.1 - 1.1	0.65	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/L	4 / 4		0.012 - 0.022	0.018	0.05	4.2	NA	0.003	No	No	NA	Yes
Silver	mg/L	0 / 4	0.01 : 0.01		0.01	0.094	NA	0.003	NA	No	NA	RL	NA
Sodium	mg/L	4 / 4		2.4 - 7.6	4.0	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/L	0 / 1	0.01 : 0.01		0.01	0.002	0.048	NA	NA	RL	No	NA	NA
Vanadium	mg/L	0 / 4	0.01 : 0.01		0.01	0.086	NA	NA	NA	No	NA	NA	NA
Zinc	mg/L	0 / 4	0.02 : 0.02		0.01	6	26	0.12	0.12	No	No	No	No
Other													
Acidity, Total	mg/L	0 / 4	10 : 10		5	NA	NA	NA	NA	NA	NA	NA	NA
Alkalinity, Total as CaCO3	mg/L	4 / 4		9.6 - 16.8	13	NA	NA	NA	NA	NA	NA	NA	NA
Chloride	mg/L	4 / 4		3.1 - 11.4	6.7	250	NA	860	230	No	NA	No	No
Fluoride	mg/L	4 / 4		4.2 - 6.4	5.0	0.8	NA	NA	NA	Yes	NA	NA	NA
pH at 25 Degrees C	Std. Units	4 / 4		6.5 - 8	8	NA	NA	NA	6.5-9	NA	NA	NA	No
Sulfate	mg/L	4 / 4		751 - 1840	1470	250	NA	NA	NA	Yes	NA	NA	NA
Sulfide	mg/L	0 / 4	0.1 : 0.1		0.1	NA	NA	NA	NA	NA	NA	NA	NA
Total Dissolved Solids	mg/L	4 / 4		2210 - 2320	2243	500	NA	NA	NA	Yes	NA	NA	NA
Total Organic Carbon	mg/L	0 / 4	1 : 1		1	NA	NA	NA	NA	NA	NA	NA	NA
Final pH	Std. Units	4 / 4		7.1 - 8.13	7.5	NA	NA	NA	6.5-9	NA	NA	NA	No

Notes:
CCR - Coal Combustion Residuals.
CCC HLSC - Continuous Criterion Concentration. Human Life-Cycle Safe Concentration.
DW - Drinking Water.
Eco - Ecological.
IDEM - Indiana Department of Environmental Management.
HH - Human Health.
Max. - Maximum Detected Concentration.
mg/L - milligram per liter.
MPL - Maximum Permissible Level.
NA - Not Available/Not Applicable.
NRWQC - National Recommended Water Quality Criteria.
RL - Reporting Limit.
RSL - Risk Based Screening Level.
SL - Screening Level.
SW - Surface Water.
USEPA - United States Environmental Protection Agency.

- Concentration is below screening level.
- Concentration is above screening level.
- Reporting limit is above screening level.

(a) - The hierarchy for selection among the Human Health Screening Levels for Drinking Water, as shown in Table 7-2, is:
1) IDEM Groundwater Tap Residential.
2) IDEM MPL.
3) USEPA RSL - Tap Water.
(b) - The hierarchy for selection among the Human Health Screening Levels for Surface Water - Consumption of Organism Only, as shown in Table 7-2, is:
1) IDEM CCC HLSC - Consumption of Organism Only (proposed).
2) IDEM CCC HLSC - Consumption of Organism Only (current).
3) USEPA NRWQC - Consumption of Organism Only.
(c) - The hierarchy for the selection of ecological screening levels, as shown in Table 7-3, is:
1) IDEM Aquatic Life Criterion (proposed).
2) IDEM Aquatic Life Criterion (current).
3) USEPA NRWQC. Aquatic Life Criteria - Freshwater.
(d) - Chromium screened as both Total Chromium and Hexavalent Chromium to be conservative.

TABLE 8
SUMMARY OF LEACHATE ANALYTICAL RESULTS WITH COMPARISON TO DRINKING WATER AND SURFACE WATER SCREENING LEVELS -
FILTER CAKE - 18 HOUR
CCR BENEFICIAL USE ASSESSMENT
AES/IPL PETERSBURG
PETERSBURG, INDIANA

Constituent	Units	Frequency of Detection	Range of Reporting Limits for Non-Detects	Range of Detected Concentrations	Average of All Samples	Selected HH DW SL (a) (mg/L)	Selected HH SW SL - Consumption of Organism Only (b) (mg/L)	Selected Eco SW SL - Acute (c) (mg/L)	Selected Eco SW SL - Chronic (c) (mg/L)	Max. or RL Exceeds Selected HH DW SL?	Max. or RL Exceeds Selected HH SW SL - Consumption of Organism Only?	Max. or RL Exceeds Selected Eco SW SL - Acute?	Max. or RL Exceeds Selected Eco SW SL - Chronic?
Inorganic Compounds													
Aluminum	mg/L	4 / 4		0.38 - 0.49	0.45	20	NA	NA	NA	No	NA	NA	NA
Antimony	mg/L	1 / 1		0.03 - 0.03	0.03	0.006	0.64	NA	NA	Yes	No	NA	NA
Arsenic	mg/L	4 / 4		0.14 - 0.29	0.23	0.01	0.000175	0.34	0.15	Yes	Yes	No	Yes
Barium	mg/L	4 / 4		0.054 - 0.078	0.065	2	NA	NA	NA	No	NA	NA	NA
Boron	mg/L	4 / 4		10.9 - 13.9	11.9	4	NA	NA	NA	Yes	NA	NA	NA
Cadmium	mg/L	0 / 4	0.002 : 0.002		0.001	0.005	NA	0.002	0.001	No	NA	RL	RL
Chromium	mg/L	2 / 4	0.01 : 0.01	0.011 - 0.015	0.009	0.1	NA	NA	NA	No	NA	NA	NA
Chromium (d)	mg/L	2 / 4	0.01 : 0.01	0.011 - 0.015	0.009	0.00035	NA	0.02	0.01				
Cobalt	mg/L	0 / 1	0.01 : 0.01		0.005	0.006	NA	NA	NA	RL	NA	NA	NA
Copper	mg/L	0 / 4	0.01 : 0.01		0.005	1.3	NA	0.01	0.01	No	NA	No	RL
Iron	mg/L	0 / 4	0.1 : 0.1		0.05	14	NA	NA	1	No	NA	NA	No
Lead	mg/L	0 / 4	0.01 : 0.01		0.005	0.015	NA	0.10	0.01	No	NA	No	RL
Magnesium	mg/L	4 / 4		5.7 - 13.2	9.0	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/L	0 / 4	0.01 : 0.01		0.005	0.43	0.1	NA	NA	No	No	NA	NA
Mercury	mg/L	0 / 4	0.002 : 0.002		0.001	0.002	0.00015	0.001	0.001	No	RL	RL	RL
Molybdenum	mg/L	4 / 4		0.6 - 0.95	0.8	0.1	NA	NA	NA	Yes	NA	NA	NA
Nickel	mg/L	0 / 4	0.01 : 0.01		0.005	0.39	4.6	0.47	0.05	No	No	No	No
Potassium	mg/L	4 / 4		6.9 - 8.8	7.6	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/L	4 / 4		0.23 - 0.34	0.29	0.05	4.2	NA	0.003	Yes	No	NA	Yes
Silver	mg/L	0 / 4	0.01 : 0.01		0.005	0.094	NA	0.003	NA	No	NA	RL	NA
Sodium	mg/L	4 / 4		269 - 317	286	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/L	0 / 1	0.01 : 0.01		0.005	0.002	0.048	NA	NA	RL	No	NA	NA
Vanadium	mg/L	4 / 4		0.049 - 0.13	0.11	0.086	NA	NA	NA	Yes	NA	NA	NA
Zinc	mg/L	0 / 4	0.02 : 0.02		0.01	6	26	0.12	0.12	No	No	No	No
Other													
Acidity, Total	mg/L	0 / 4	10 : 10		5	NA	NA	NA	NA	NA	NA	NA	NA
Alkalinity, Total as CaCO3	mg/L	4 / 4		63.6 - 87	74	NA	NA	NA	NA	NA	NA	NA	NA
Chloride	mg/L	4 / 4		121 - 160	138	250	NA	860	230	No	NA	No	No
Fluoride	mg/L	4 / 4		0.9 - 1.5	1.2	0.8	NA	NA	NA	Yes	NA	NA	NA
pH at 25 Degrees C	Std. Units	4 / 4		9.1 - 9.4	9.2	NA	NA	NA	6.5-9	NA	NA	NA	Yes
Sulfate	mg/L	4 / 4		870 - 1690	1428	250	NA	NA	NA	Yes	NA	NA	NA
Sulfide	mg/L	0 / 4	0.1 : 0.1		0.05	NA	NA	NA	NA	NA	NA	NA	NA
Total Dissolved Solids	mg/L	4 / 4		1930 - 3000	2455	500	NA	NA	NA	Yes	NA	NA	NA
Total Organic Carbon	mg/L	2 / 4	1 : 1	1.3 - 1.3	0.9	NA	NA	NA	NA	NA	NA	NA	NA
Initial pH	Std. Units	1 / 1		9.39 - 9.39	9.39	NA	NA	NA	6.5-9	NA	NA	NA	Yes
Final pH	Std. Units	4 / 4		8.67 - 9.39	9.08	NA	NA	NA	6.5-9	NA	NA	NA	Yes

Notes:
CCR - Coal Combustion Residuals.
CCC HLSC - Continuous Criterion Concentration. Human Life-Cycle Safe Concentration.
DW - Drinking Water.
Eco - Ecological.
IDEM - Indiana Department of Environmental Management.
HH - Human Health.
Max. - Maximum Detected Concentration.
mg/L - milligram per liter.
MPL - Maximum Permissible Level.
NA - Not Available/Not Applicable.
NRWQC - National Recommended Water Quality Criteria.
RL - Reporting Limit.
RSL - Risk Based Screening Level.
SL - Screening Level.
SW - Surface Water.
USEPA - United States Environmental Protection Agency.

- Concentration is below screening level.
- Concentration is above screening level.
- Reporting limit is above screening level.

(a) - The hierarchy for selection among the Human Health Screening Levels for Drinking Water, as shown in Table 7-2, is:
1) IDEM Groundwater Tap Residential.
2) IDEM MPL.
3) USEPA RSL - Tap Water.
(b) - The hierarchy for selection among the Human Health Screening Levels for Surface Water - Consumption of Organism Only, as shown in Table 7-2, is:
1) IDEM CCC HLSC - Consumption of Organism Only (proposed).
2) IDEM CCC HLSC - Consumption of Organism Only (current).
3) USEPA NRWQC - Consumption of Organism Only.
(c) - The hierarchy for the selection of ecological screening levels, as shown in Table 7-3, is:
1) IDEM Aquatic Life Criterion (proposed).
2) IDEM Aquatic Life Criterion (current).
3) USEPA NRWQC. Aquatic Life Criteria - Freshwater.
(d) - Chromium screened as both Total Chromium and Hexavalent Chromium to be conservative.

TABLE 9
SUMMARY OF LEACHATE ANALYTICAL RESULTS WITH COMPARISON TO DRINKING WATER AND SURFACE WATER SCREENING LEVELS -
FILTER CAKE - 30 DAY
CCR BENEFICIAL USE ASSESSMENT
AES/IPL PETERSBURG
PETERSBURG, INDIANA

Constituent	Units	Frequency of Detection	Range of Reporting Limits for Non-Detects	Range of Detected Concentrations	Average of All Samples	Selected HH DW SL (a) (mg/L)	Selected HH SW SL - Consumption of Organism Only (b) (mg/L)	Selected Eco SW SL - Acute (c) (mg/L)	Selected Eco SW SL - Chronic (c) (mg/L)	Max. or RL Exceeds Selected HH DW SL?	Max. or RL Exceeds Selected HH SW SL - Consumption of Organism Only?	Max. or RL Exceeds Selected Eco SW SL - Acute?	Max. or RL Exceeds Selected Eco SW SL - Chronic?
Inorganic Compounds													
Aluminum	mg/L	4 / 4		0.48 - 0.7	0.61	20	NA	NA	NA	No	NA	NA	NA
Antimony	mg/L	1 / 1		0.032 - 0.032	0.032	0.006	0.64	NA	NA	Yes	No	NA	NA
Arsenic	mg/L	4 / 4		0.27 - 0.42	0.34	0.01	0.000175	0.34	0.15	Yes	Yes	Yes	Yes
Barium	mg/L	4 / 4		0.069 - 0.11	0.09	2	NA	NA	NA	No	NA	NA	NA
Boron	mg/L	4 / 4		11.5 - 14.5	12.6	4	NA	NA	NA	Yes	NA	NA	NA
Cadmium	mg/L	0 / 4	0.002 : 0.002		0.001	0.005	NA	0.002	0.001	No	NA	RL	RL
Chromium	mg/L	1 / 4	0.01 : 0.01	0.014 - 0.014	0.007	0.1	NA	NA	NA	No	NA	NA	NA
Chromium (d)	mg/L	1 / 4	0.01 : 0.01	0.014 - 0.014	0.007	0.00035	NA	0.02	0.01	Yes	NA	No	Yes
Cobalt	mg/L	0 / 1	0.01 : 0.01		0.005	0.006	NA	NA	NA	RL	NA	NA	NA
Copper	mg/L	0 / 4	0.01 : 0.01		0.005	1.3	NA	0.01	0.01	No	NA	No	RL
Iron	mg/L	1 / 4	0.1 : 0.1	0.17 - 0.17	0.08	14	NA	NA	1	No	NA	NA	No
Lead	mg/L	0 / 4	0.01 : 0.01		0.005	0.015	NA	0.10	0.01	No	NA	No	RL
Magnesium	mg/L	4 / 4		9 - 15.2	11.7	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/L	2 / 4	0.01 : 0.01	0.011 - 0.011	0.008	0.43	0.1	NA	NA	No	No	NA	NA
Mercury	mg/L	0 / 4	0.002 : 0.002		0.001	0.002	0.00015	0.001	0.001	No	RL	RL	RL
Molybdenum	mg/L	4 / 4		0.63 - 0.96	0.79	0.1	NA	NA	NA	Yes	NA	NA	NA
Nickel	mg/L	0 / 4	0.01 : 0.01		0.005	0.39	4.6	0.47	0.05	No	No	No	No
Potassium	mg/L	4 / 4		6.9 - 9.4	7.7	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/L	4 / 4		0.2 - 0.3	0.27	0.05	4.2	NA	0.003	Yes	No	NA	Yes
Silver	mg/L	0 / 4	0.01 : 0.01		0.005	0.094	NA	0.003	NA	No	NA	RL	NA
Sodium	mg/L	4 / 4		256 - 285	273	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/L	0 / 1	0.01 : 0.01		0.005	0.002	0.048	NA	NA	RL	No	NA	NA
Vanadium	mg/L	4 / 4		0.12 - 0.23	0.17	0.086	NA	NA	NA	Yes	NA	NA	NA
Zinc	mg/L	0 / 4	0.02 : 0.02		0.01	6	26	0.12	0.12	No	No	No	No
Other													
Acidity, Total	mg/L	0 / 4	10 : 10		5	NA	NA	NA	NA	NA	NA	NA	NA
Alkalinity, Total as CaCO3	mg/L	4 / 4		63.7 - 81.3	72.4	NA	NA	NA	NA	NA	NA	NA	NA
Chloride	mg/L	4 / 4		120 - 141	132	250	NA	860	230	No	NA	No	No
Fluoride	mg/L	4 / 4		1.2 - 2.3	1.8	0.8	NA	NA	NA	Yes	NA	NA	NA
pH at 25 Degrees C	Std. Units	4 / 4		8.9 - 9.2	9.1	NA	NA	NA	6.5-9	NA	NA	NA	Yes
Sulfate	mg/L	4 / 4		868 - 2000	1555	250	NA	NA	NA	Yes	NA	NA	NA
Sulfide	mg/L	0 / 4	0.1 : 0.1		0.05	NA	NA	NA	NA	NA	NA	NA	NA
Total Dissolved Solids	mg/L	4 / 4		2720 - 3070	2875	500	NA	NA	NA	Yes	NA	NA	NA
Total Organic Carbon	mg/L	0 / 4	1 : 1		0.5	NA	NA	NA	NA	NA	NA	NA	NA
Final pH	Std. Units	4 / 4		8.68 - 9.18	9.00	NA	NA	NA	6.5-9	NA	NA	NA	Yes

Notes:
CCR - Coal Combustion Residuals.
CCC HLSC - Continuous Criterion Concentration. Human Life-Cycle Safe Concentration.
DW - Drinking Water.
Eco - Ecological.
IDEM - Indiana Department of Environmental Management.
HH - Human Health.
Max. - Maximum Detected Concentration.
mg/L - milligram per liter.
MPL - Maximum Permissible Level.
NA - Not Available/Not Applicable.
NRWQC - National Recommended Water Quality Criteria.
RL - Reporting Limit.
RSL - Risk Based Screening Level.
SL - Screening Level.
SW - Surface Water.
USEPA - United States Environmental Protection Agency.

- Concentration is below screening level.
- Concentration is above screening level.
- Reporting limit is above screening level.

(a) - The hierarchy for selection among the Human Health Screening Levels for Drinking Water, as shown in Table 7-2, is:
1) IDEM Groundwater Tap Residential.
2) IDEM MPL.
3) USEPA RSL - Tap Water.
(b) - The hierarchy for selection among the Human Health Screening Levels for Surface Water - Consumption of Organism Only, as shown in Table 7-2, is:
1) IDEM CCC HLSC - Consumption of Organism Only (proposed).
2) IDEM CCC HLSC - Consumption of Organism Only (current).
3) USEPA NRWQC - Consumption of Organism Only.
(c) - The hierarchy for the selection of ecological screening levels, as shown in Table 7-3, is:
1) IDEM Aquatic Life Criterion (proposed).
2) IDEM Aquatic Life Criterion (current).
3) USEPA NRWQC. Aquatic Life Criteria - Freshwater.
(d) - Chromium screened as both Total Chromium and Hexavalent Chromium to be conservative.

TABLE 10
SUMMARY OF LEACHATE ANALYTICAL RESULTS WITH COMPARISON TO DRINKING WATER AND SURFACE WATER SCREENING LEVELS -
WWTP HEADWORKS - 18 HOUR
CCR BENEFICIAL USE ASSESSMENT
AES/IPL PETERSBURG
PETERSBURG, INDIANA

Constituent	Units	Frequency of Detection	Range of Reporting Limits for Non-Detects	Range of Detected Concentrations	Average of All Samples	Selected HH DW SL (a) (mg/L)	Selected HH SW SL - Consumption of Organism Only (b) (mg/L)	Selected Eco SW SL - Acute (c) (mg/L)	Selected Eco SW SL - Chronic (c) (mg/L)	Max. or RL Exceeds Selected HH DW SL?	Max. or RL Exceeds Selected HH SW SL - Consumption of Organism Only?	Max. or RL Exceeds Selected Eco SW SL - Acute?	Max. or RL Exceeds Selected Eco SW SL - Chronic?
Inorganic Compounds													
Aluminum	mg/L	1 / 1		0.62 - 0.62	0.62	20	NA	NA	NA	No	NA	NA	NA
Antimony	mg/L	0 / 1	0.008 : 0.008		0.004	0.006	0.64	NA	NA	RL	No	NA	NA
Arsenic	mg/L	0 / 1	0.01 : 0.01		0.01	0.01	0.000175	0.34	0.15	No	RL	No	No
Barium	mg/L	1 / 1		0.029 - 0.029	0.029	2	NA	NA	NA	No	NA	NA	NA
Boron	mg/L	1 / 1		17.5 - 17.5	17.5	4	NA	NA	NA	Yes	NA	NA	NA
Cadmium	mg/L	0 / 1	0.002 : 0.002		0.001	0.005	NA	0.002	0.001	No	NA	RL	RL
Chromium	mg/L	0 / 1	0.01 : 0.01		0.01	0.1	NA	NA	NA	No	NA	NA	NA
Chromium (d)	mg/L	0 / 1	0.01 : 0.01		0.01	0.00035	NA	0.02	0.01	RL	NA	No	No
Cobalt	mg/L	0 / 1	0.01 : 0.01		0.01	0.006	NA	NA	NA	RL	NA	NA	NA
Copper	mg/L	0 / 1	0.01 : 0.01		0.01	1.3	NA	0.01	0.01	No	NA	No	RL
Iron	mg/L	0 / 1	0.1 : 0.1		0.1	14	NA	NA	1	No	NA	NA	No
Lead	mg/L	0 / 1	0.01 : 0.01		0.01	0.015	NA	0.10	0.01	No	NA	No	RL
Magnesium	mg/L	1 / 1		124 - 124	124	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/L	1 / 1		0.5 - 0.5	0.5	0.43	0.1	NA	NA	Yes	Yes	NA	NA
Mercury	mg/L	0 / 1	0.002 : 0.002		0.001	0.002	0.00015	0.001	0.001	No	RL	RL	RL
Molybdenum	mg/L	1 / 1		0.016 - 0.016	0.016	0.1	NA	NA	NA	No	NA	NA	NA
Nickel	mg/L	0 / 1	0.01 : 0.01		0.01	0.39	4.6	0.47	0.05	No	No	No	No
Potassium	mg/L	1 / 1		2.9 - 2.9	2.9	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/L	1 / 1		0.061 - 0.061	0.061	0.05	4.2	NA	0.003	Yes	No	NA	Yes
Silver	mg/L	0 / 1	0.01 : 0.01		0.01	0.094	NA	0.003	NA	No	NA	RL	NA
Sodium	mg/L	1 / 1		27.9 - 27.9	27.9	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/L	0 / 1	0.01 : 0.01		0.01	0.002	0.048	NA	NA	RL	No	NA	NA
Vanadium	mg/L	0 / 1	0.01 : 0.01		0.01	0.086	NA	NA	NA	No	NA	NA	NA
Zinc	mg/L	0 / 1	0.02 : 0.02		0.01	6	26	0.12	0.12	No	No	No	No
Other													
Acidity, Total	mg/L	0 / 1	10 : 10		5	NA	NA	NA	NA	NA	NA	NA	NA
Alkalinity, Total as CaCO3	mg/L	1 / 1		21.3 - 21.3	21.3	NA	NA	NA	NA	NA	NA	NA	NA
Chloride	mg/L	1 / 1		89 - 89	89	250	NA	860	230	No	NA	No	No
Fluoride	mg/L	1 / 1		7.8 - 7.8	7.8	0.8	NA	NA	NA	Yes	NA	NA	NA
pH at 25 Degrees C	Std. Units	1 / 1		8.2 - 8.2	8.2	NA	NA	NA	6.5-9	NA	NA	NA	No
Sulfate	mg/L	1 / 1		1040 - 1040	1040	250	NA	NA	NA	Yes	NA	NA	NA
Sulfide	mg/L	0 / 1	0.1 : 0.1		0.05	NA	NA	NA	NA	NA	NA	NA	NA
Total Dissolved Solids	mg/L	1 / 1		2940 - 2940	2940	500	NA	NA	NA	Yes	NA	NA	NA
Total Organic Carbon	mg/L	0 / 1	1 : 1		1	NA	NA	NA	NA	NA	NA	NA	NA
Final pH	Std. Units	1 / 1		8.04 - 8.04	8.04	NA	NA	NA	6.5-9	NA	NA	NA	No

Notes:
CCR - Coal Combustion Residuals.
CCC HLSC - Continuous Criterion Concentration. Human Life-Cycle Safe Concentration.
DW - Drinking Water.
Eco - Ecological.
IDEM - Indiana Department of Environmental Management.
HH - Human Health.
Max. - Maximum Detected Concentration.
mg/L - milligram per liter.
MPL - Maximum Permissible Level.
NA - Not Available/Not Applicable.
NRWQC - National Recommended Water Quality Criteria.
RL - Reporting Limit.
RSL - Risk Based Screening Level.
SL - Screening Level.
SW - Surface Water.
USEPA - United States Environmental Protection Agency.
WWT FGD - Wastewater Treatment Flue Gas Desulfurization.

- Concentration is below screening level.
- Concentration is above screening level.
- Reporting limit is above screening level.

(a) - The hierarchy for selection among the Human Health Screening Levels for Drinking Water, as shown in Table 7-2, is:
1) IDEM Groundwater Tap Residential.
2) IDEM MPL.
3) USEPA RSL - Tap Water.
(b) - The hierarchy for selection among the Human Health Screening Levels for Surface Water - Consumption of Organism Only, as shown in Table 7-2, is:
1) IDEM CCC HLSC - Consumption of Organism Only (proposed).
2) IDEM CCC HLSC - Consumption of Organism Only (current).
3) USEPA NRWQC - Consumption of Organism Only.
(c) - The hierarchy for the selection of ecological screening levels, as shown in Table 7-3, is:
1) IDEM Aquatic Life Criterion (proposed).
2) IDEM Aquatic Life Criterion (current).
3) USEPA NRWQC. Aquatic Life Criteria - Freshwater.
(d) - Chromium screened as both Total Chromium and Hexavalent Chromium to be conservative.

TABLE 11
SUMMARY OF LEACHATE ANALYTICAL RESULTS WITH COMPARISON TO DRINKING WATER AND SURFACE WATER SCREENING LEVELS -
WWTP HEADWORKS - 30 DAY
CCR BENEFICIAL USE ASSESSMENT
AES/IPL PETERSBURG
PETERSBURG, INDIANA

Constituent	Units	Frequency of Detection	Range of Reporting Limits for Non-Detects	Range of Detected Concentrations	Average of All Samples	Selected HH DW SL (a) (mg/L)	Selected HH SW SL - Consumption of Organism Only (b) (mg/L)	Selected Eco SW SL - Acute (c) (mg/L)	Selected Eco SW SL - Chronic (c) (mg/L)	Max. or RL Exceeds Selected HH DW SL?	Max. or RL Exceeds Selected HH SW SL - Consumption of Organism Only?	Max. or RL Exceeds Selected Eco SW SL - Acute?	Max. or RL Exceeds Selected Eco SW SL - Chronic?
Inorganic Compounds													
Aluminum	mg/L	0 / 1	0.2 : 0.2		0.1	20	NA	NA	NA	No	NA	NA	NA
Antimony	mg/L	0 / 1	0.008 : 0.008		0.004	0.006	0.64	NA	NA	RL	No	NA	NA
Arsenic	mg/L	0 / 1	0.01 : 0.01		0.01	0.01	0.000175	0.34	0.15	No	RL	No	No
Barium	mg/L	1 / 1		0.024 - 0.024	0.024	2	NA	NA	NA	No	NA	NA	NA
Boron	mg/L	1 / 1		13.7 - 13.7	13.7	4	NA	NA	NA	Yes	NA	NA	NA
Cadmium	mg/L	0 / 1	0.002 : 0.002		0.001	0.005	NA	0.002	0.001	No	NA	RL	RL
Chromium	mg/L	0 / 1	0.01 : 0.01		0.01	0.1	NA	NA	NA	No	NA	NA	NA
Chromium (d)	mg/L	0 / 1	0.01 : 0.01		0.01	0.00035	NA	0.02	0.01	RL	NA	No	No
Cobalt	mg/L	0 / 1	0.01 : 0.01		0.01	0.006	NA	NA	NA	RL	NA	NA	NA
Copper	mg/L	0 / 1	0.01 : 0.01		0.01	1.3	NA	0.01	0.01	No	NA	No	RL
Iron	mg/L	0 / 1	0.1 : 0.1		0.1	14	NA	NA	1	No	NA	NA	No
Lead	mg/L	0 / 1	0.01 : 0.01		0.01	0.015	NA	0.10	0.01	No	NA	No	RL
Magnesium	mg/L	1 / 1		95.8 - 95.8	95.8	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/L	0 / 1	0.01 : 0.01		0.01	0.43	0.1	NA	NA	No	No	NA	NA
Mercury	mg/L	0 / 1	0.002 : 0.002		0.001	0.002	0.00015	0.001	0.001	No	RL	RL	RL
Molybdenum	mg/L	1 / 1		0.013 - 0.013	0.013	0.1	NA	NA	NA	No	NA	NA	NA
Nickel	mg/L	0 / 1	0.01 : 0.01		0.01	0.39	4.6	0.47	0.05	No	No	No	No
Potassium	mg/L	1 / 1		2.4 - 2.4	2.4	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/L	1 / 1		0.056 - 0.056	0.056	0.05	4.2	NA	0.003	Yes	No	NA	Yes
Silver	mg/L	0 / 1	0.01 : 0.01		0.01	0.094	NA	0.003	NA	No	NA	RL	NA
Sodium	mg/L	1 / 1		21.6 - 21.6	21.6	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/L	0 / 1	0.01 : 0.01		0.01	0.002	0.048	NA	NA	RL	No	NA	NA
Vanadium	mg/L	0 / 1	0.01 : 0.01		0.01	0.086	NA	NA	NA	No	NA	NA	NA
Zinc	mg/L	0 / 1	0.02 : 0.02		0.01	6	26	0.12	0.12	No	No	No	No
Other													
Acidity, Total	mg/L	1 / 1		17 - 17	17	NA	NA	NA	NA	NA	NA	NA	NA
Alkalinity, Total as CaCO3	mg/L	1 / 1		23.9 - 23.9	23.9	NA	NA	NA	NA	NA	NA	NA	NA
Chloride	mg/L	1 / 1		69.9 - 69.9	69.9	250	NA	860	230	No	NA	No	No
Fluoride	mg/L	1 / 1		7.8 - 7.8	7.8	0.8	NA	NA	NA	Yes	NA	NA	NA
pH at 25 Degrees C	Std. Units	1 / 1		7.5 - 7.5	7.5	NA	NA	NA	6.5-9	NA	NA	NA	No
Sulfate	mg/L	1 / 1		868 - 868	868	250	NA	NA	NA	Yes	NA	NA	NA
Sulfide	mg/L	0 / 1	0.1 : 0.1		0.1	NA	NA	NA	NA	NA	NA	NA	NA
Total Dissolved Solids	mg/L	1 / 1		2800 - 2800	2800	500	NA	NA	NA	Yes	NA	NA	NA
Total Organic Carbon	mg/L	0 / 1	1 : 1		1	NA	NA	NA	NA	NA	NA	NA	NA
Final pH	Std. Units	1 / 1		7.73 - 7.73	7.73	NA	NA	NA	6.5-9	NA	NA	NA	No

Notes:
CCR - Coal Combustion Residuals.
CCC HLSC - Continuous Criterion Concentration. Human Life-Cycle Safe Concentration.
DW - Drinking Water.
Eco - Ecological.
IDEM - Indiana Department of Environmental Management.
HH - Human Health.
Max. - Maximum Detected Concentration.
mg/L - milligram per liter.
MPL - Maximum Permissible Level.
NA - Not Available/Not applicable.
NRWQC - National Recommended Water Quality Criteria
RL - Reporting Limit.
RSL - Risk Based Screening Level.
SL - Screening Level.
SW - Surface Water.
USEPA - United States Environmental Protection Agency.
WWT FGD - Wastewater Treatment Flue Gas Desulfurization.

- Concentration is below screening value.
- Concentration is above screening level.
- Reporting limit is above screening value.

(a) - The hierarchy for selection among the Human Health Screening Levels for Drinking Water, as shown in Table 7-2, is:
1) IDEM Groundwater Tap Residential.
2) IDEM MPL.
3) USEPA RSL - Tap Water.
(b) - The hierarchy for selection among the Human Health Screening Levels for Surface Water - Consumption of Organism Only, as shown in Table 7-2, is:
1) IDEM CCC HLSC - Consumption of Organism Only (proposed).
2) IDEM CCC HLSC - Consumption of Organism Only (current).
3) USEPA NRWQC - Consumption of Organism Only.
(c) - The hierarchy for the selection of ecological screening levels, as shown in Table 7-3, is:
1) IDEM Aquatic Life Criterion (proposed).
2) IDEM Aquatic Life Criterion (current).
3) USEPA NRWQC. Aquatic Life Criteria - Freshwater.
(d) - Chromium screened as both Total Chromium and Hexavalent Chromium to be conservative.

APPENDIX F-3

Solids Conversion Leachate Screening Analysis

TABLE 1
SUMMARY OF ESTIMATED LEACHING POTENTIAL WITH COMPARISON TO DRINKING WATER AND SURFACE WATER SCREENING LEVELS - BOTTOM ASH
CCR BENEFICIAL USE ASSESSMENT
AES/IPL PETERSBURG
PETERSBURG, INDIANA

	Solids Data			Estimated Leaching Potential		Selected Screening Levels				Screening			
Constituent	Units	Maximum Reporting Limit	Maximum Detected Concentration	Units	Max. or RL - Leaching Potential Concentration (a)	Selected HH DW SL (b) (mg/L)	Selected HH SW SL - Consumption of Organism Only (c) (mg/L)	Selected Eco SW SL - Acute (d) (mg/L)	Selected Eco SW SL - Chronic (d) (mg/L)	Max. or RL Exceeds Selected HH DW SL?	Max. or RL Exceeds Selected HH SW SL - Consumption of Organism Only?	Max. or RL Exceeds Selected Eco SW SL - Acute?	Max. or RL Exceeds Selected Eco SW SL - Chronic?
Inorganic Compounds													
Aluminum	mg/kg		5230	mg/L	261.5	20	NA	NA	NA	Yes	NA	NA	NA
Antimony	mg/kg	0.9		mg/L	0.05	0.006	0.64	NA	NA	RL	No	NA	NA
Arsenic	mg/kg		11	mg/L	0.55	0.01	0.000175	0.34	0.15	Yes	Yes	Yes	Yes
Barium	mg/kg		24.7	mg/L	1.24	2	NA	NA	NA	No	NA	NA	NA
Boron	mg/kg		81.2	mg/L	4.06	4	NA	NA	NA	Yes	NA	NA	NA
Cadmium	mg/kg	0.47		mg/L	0.024	0.005	NA	0.002	0.001	RL	NA	RL	RL
Chromium	mg/kg		11	mg/L	0.55	0.1	NA	NA	NA	Yes	NA	NA	NA
Chromium (e)	mg/kg		11	mg/L	0.55	0.00035	NA	0.02	0.01	Yes	NA	Yes	Yes
Cobalt	mg/kg		2.5	mg/L	0.13	0.006	NA	NA	NA	Yes	NA	NA	NA
Copper	mg/kg		16.5	mg/L	0.825	1.3	NA	0.01	0.01	No	NA	Yes	Yes
Iron	mg/kg		23600	mg/L	1180	14	NA	NA	1	Yes	NA	NA	Yes
Lead	mg/kg		2.9	mg/L	0.15	0.015	NA	0.10	0.01	Yes	NA	Yes	Yes
Magnesium	mg/kg		896	mg/L	44.8	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg		39.2	mg/L	1.96	0.43	0.1	NA	NA	Yes	Yes	NA	NA
Mercury	mg/kg	0.02	0.05	mg/L	0.003	0.002	0.00015	0.001	0.001	Yes	Yes	Yes	Yes
Molybdenum	mg/kg		3.9	mg/L	0.20	0.1	NA	NA	NA	Yes	NA	NA	NA
Nickel	mg/kg		19.3	mg/L	0.965	0.39	4.6	0.47	0.05	Yes	No	Yes	Yes
Potassium	mg/kg		712	mg/L	35.6	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	0.94	2.8	mg/L	0.14	0.05	4.2	NA	0.003	Yes	No	NA	Yes
Silver	mg/kg	0.47		mg/L	0.024	0.094	NA	0.003	NA	No	NA	RL	NA
Sodium	mg/kg		378	mg/L	18.9	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg		1.5	mg/L	0.075	0.002	0.048	NA	NA	Yes	Yes	NA	NA
Vanadium	mg/kg		23.2	mg/L	1.16	0.086	NA	NA	NA	Yes	NA	NA	NA
Zinc	mg/kg		19.2	mg/L	0.96	6	26	0.12	0.12	No	No	Yes	Yes
Other													
Acidity, Total	mg/kg	100		mg/L	5	NA	NA	NA	NA	NA	NA	NA	NA
Chloride	mg/kg	100		mg/L	5	250	NA	860	230	No	NA	No	No
Fluoride	mg/kg	10	27.7	mg/L	1.39	0.8	NA	NA	NA	Yes	NA	NA	NA
Percent Moisture	%		22.8	%	NA	NA	NA	NA	NA	NA	NA	NA	NA
pH at 25 Degrees C	Std. Units		8.1	Std. Units	NA	NA	NA	NA	6.5-9	NA	NA	NA	NA
Sulfate	mg/kg		18200	mg/L	910	250	NA	NA	NA	Yes	NA	NA	NA
Sulfide	mg/kg	50	9220	mg/L	461	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	mg/kg		86300	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mean Total Organic Carbon	mg/kg		80600	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

CCR - Coal Combustion Residuals.
CCC - Continuous Criterion Concentration.
DW - Drinking Water.
Eco - Ecological.
IDEM - Indiana Department of Environmental Management.
HH - Human Health.
HLSC - Human Life-Cycle Safe Concentration.
Max. - Maximum Detected Concentration.
mg/L - milligram per liter.
MPL - Maximum Permissible Level.
NA - Not Available/Not Applicable.
NRWQC - National Recommended Water Quality Criteria.
RL - Reporting Limit.
RSL - Risk Based Screening Level.
SL - Screening Level.
SW - Surface Water.
USEPA - United States Environmental Protection Agency.

- Concentration is below screening level.
- Concentration is above screening level.
- Reporting limit is above screening level.

(a) - Leaching potential value is estimated as the maximum detected concentration or reporting limit for solids divided by 20.
(b) - The hierarchy for selection among the Human Health Screening Levels for Drinking Water, as shown in Table 7-2, is:
1) IDEM Groundwater Tap Residential.
2) IDEM MPL.
3) USEPA RSL - Tap Water.
(c) - The hierarchy for selection among the Human Health Screening Levels for Surface Water - Consumption of Organism Only, as shown in Table 7-2, is:
1) IDEM CCC HLSC - Consumption of Organism Only (proposed).
2) IDEM CCC HLSC - Consumption of Organism Only (current).
3) USEPA NRWQC - Consumption of Organism Only.
(d) - The hierarchy for the selection of ecological screening levels, as shown in Table 7-3, is:
1) IDEM Aquatic Life Criterion (proposed).
2) IDEM Aquatic Life Criterion (current).
3) USEPA NRWQC. Aquatic Life Criteria - Freshwater.
(e) - Chromium screened as both Total Chromium and Hexavalent Chromium to be conservative.

TABLE 2
SUMMARY OF ESTIMATED LEACHING POTENTIAL WITH COMPARISON TO DRINKING WATER AND SURFACE WATER SCREENING LEVELS -
FLY ASH
CCR BENEFICIAL USE ASSESSMENT
AES/IPL PETERSBURG
PETERSBURG, INDIANA

	Solids Data			Estimated Leaching Potential		Selected Screening Levels				Screening			
Constituent	Units	Maximum Reporting Limit	Maximum Detected Concentration	Units	Max. or RL - Leaching Potential Concentration (a)	Selected HH DW SL (b) (mg/L)	Selected HH SW SL - Consumption of Organism Only (c) (mg/L)	Selected Eco SW SL - Acute (d) (mg/L)	Selected Eco SW SL - Chronic (d) (mg/L)	Max. or RL Exceeds Selected HH DW SL?	Max. or RL Exceeds Selected HH SW SL - Consumption of Organism Only?	Max. or RL Exceeds Selected Eco SW SL - Acute?	Max. or RL Exceeds Selected Eco SW SL - Chronic?
Inorganic Compounds													
Aluminum	mg/kg		8330	mg/L	416.5	20	NA	NA	NA	Yes	NA	NA	NA
Antimony	mg/kg		1.3	mg/L	0.065	0.006	0.64	NA	NA	Yes	No	NA	NA
Arsenic	mg/kg		121	mg/L	6.05	0.01	0.000175	0.34	0.15	Yes	Yes	Yes	Yes
Barium	mg/kg		55.9	mg/L	2.80	2	NA	NA	NA	Yes	NA	NA	NA
Boron	mg/kg		414	mg/L	20.7	4	NA	NA	NA	Yes	NA	NA	NA
Cadmium	mg/kg		1.6	mg/L	0.08	0.005	NA	0.002	0.001	Yes	NA	Yes	Yes
Chromium	mg/kg		39.9	mg/L	2.00	0.1	NA	NA	NA	Yes	NA	NA	NA
Chromium (e)	mg/kg		39.9	mg/L	2.00	0.00035	NA	0.02	0.01	Yes	NA	Yes	Yes
Cobalt	mg/kg		10.4	mg/L	0.520	0.006	NA	NA	NA	Yes	NA	NA	NA
Copper	mg/kg		33.8	mg/L	1.69	1.3	NA	0.01	0.01	Yes	NA	Yes	Yes
Iron	mg/kg		45600	mg/L	2280	14	NA	NA	1	Yes	NA	NA	Yes
Lead	mg/kg		31.4	mg/L	1.57	0.015	NA	0.10	0.01	Yes	NA	Yes	Yes
Magnesium	mg/kg		846	mg/L	42.3	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg		55.9	mg/L	2.80	0.43	0.1	NA	NA	Yes	Yes	NA	NA
Mercury	mg/kg		0.8	mg/L	0.04	0.002	0.00015	0.001	0.001	Yes	Yes	Yes	Yes
Molybdenum	mg/kg		30.4	mg/L	1.52	0.1	NA	NA	NA	Yes	NA	NA	NA
Nickel	mg/kg		47	mg/L	2.4	0.39	4.6	0.47	0.05	Yes	No	Yes	Yes
Potassium	mg/kg		1540	mg/L	77	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg		19.6	mg/L	0.980	0.05	4.2	NA	0.003	Yes	No	NA	Yes
Silver	mg/kg	0.5		mg/L	0.025	0.094	NA	0.003	NA	No	NA	RL	NA
Sodium	mg/kg		20500	mg/L	1025	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg		4.8	mg/L	0.24	0.002	0.048	NA	NA	Yes	Yes	NA	NA
Vanadium	mg/kg		73	mg/L	3.7	0.086	NA	NA	NA	Yes	NA	NA	NA
Zinc	mg/kg		74.5	mg/L	3.73	6	26	0.12	0.12	No	No	Yes	Yes
Other													
Acidity, Total	mg/kg	100		mg/L	5	NA	NA	NA	NA	NA	NA	NA	NA
Chloride	mg/kg		5070	mg/L	253.5	250	NA	860	230	Yes	NA	No	Yes
Fluoride	mg/kg		38.1	mg/L	1.91	0.8	NA	NA	NA	Yes	NA	NA	NA
Percent Moisture	%		5.1	%	NA	NA	NA	NA	NA	NA	NA	NA	NA
pH at 25 Degrees C	Std. Units		10.3	Std. Units	NA	NA	NA	NA	6.5-9	NA	NA	NA	NA
Sulfate	mg/kg		28300	mg/L	1415	250	NA	NA	NA	Yes	NA	NA	NA
Sulfide	mg/kg	50		mg/L	2.5	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	mg/kg		28200	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mean Total Organic Carbon	mg/kg		28100	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

CCR - Coal Combustion Residuals.
CCC - Continuous Criterion Concentration.
DW - Drinking Water.
Eco - Ecological.
IDEM - Indiana Department of Environmental Management.
HH - Human Health.
HLSC - Human Life-Cycle Safe Concentration.
Max. - Maximum Detected Concentration.
mg/L - milligram per liter.
MPL - Maximum Permissible Level.
NA - Not Available/Not Applicable.
NRWQC - National Recommended Water Quality Criteria.
RL - Reporting Limit.
RSL - Risk Based Screening Level.
SL - Screening Level.
SW - Surface Water.
USEPA - United States Environmental Protection Agency.

- Concentration is below screening level.
- Concentration is above screening level.
- Reporting limit is above screening level.

(a) - Leaching potential value is estimated as the maximum detected concentration or reporting limit for solids divided by 20.
(b) - The hierarchy for selection among the Human Health Screening Levels for Drinking Water, as shown in Table 7-2, is:
1) IDEM Groundwater Tap Residential.
2) IDEM MPL.
3) USEPA RSL - Tap Water.
(c) - The hierarchy for selection among the Human Health Screening Levels for Surface Water - Consumption of Organism Only, as shown in Table 7-2, is:
1) IDEM CCC HLSC - Consumption of Organism Only (proposed).
2) IDEM CCC HLSC - Consumption of Organism Only (current).
3) USEPA NRWQC - Consumption of Organism Only.
(d) - The hierarchy for the selection of ecological screening levels, as shown in Table 7-3, is:
1) IDEM Aquatic Life Criterion (proposed).
2) IDEM Aquatic Life Criterion (current).
3) USEPA NRWQC. Aquatic Life Criteria - Freshwater.
(e) - Chromium screened as both Total Chromium and Hexavalent Chromium to be conservative.

TABLE 3
SUMMARY OF ESTIMATED LEACHING POTENTIAL WITH COMPARISON TO DRINKING WATER AND SURFACE WATER SCREENING LEVELS - GYPSUM
CCR BENEFICIAL USE ASSESSMENT
AES/IPL PETERSBURG
PETERSBURG, INDIANA

	Solids Data			Estimated Leaching Potential		Selected Screening Levels				Screening			
Constituent	Units	Maximum Reporting Limit	Maximum Detected Concentration	Units	Max. or RL - Leaching Potential Concentration (a)	Selected HH DW SL (b) (mg/L)	Selected HH SW SL - Consumption of Organism Only (c) (mg/L)	Selected Eco SW SL - Acute (d) (mg/L)	Selected Eco SW SL - Chronic (d) (mg/L)	Max. or RL Exceeds Selected HH DW SL?	Max. or RL Exceeds Selected HH SW SL - Consumption of Organism Only?	Max. or RL Exceeds Selected Eco SW SL - Acute?	Max. or RL Exceeds Selected Eco SW SL - Chronic?
Inorganic Compounds													
Aluminum	mg/kg		581	mg/L	29.1	20	NA	NA	NA	Yes	NA	NA	NA
Antimony	mg/kg	0.9		mg/L	0.05	0.006	0.64	NA	NA	RL	No	NA	NA
Arsenic	mg/kg		3.1	mg/L	0.16	0.01	0.000175	0.34	0.15	Yes	Yes	No	Yes
Barium	mg/kg		15	mg/L	0.75	2	NA	NA	NA	No	NA	NA	NA
Boron	mg/kg		59.6	mg/L	2.98	4	NA	NA	NA	No	NA	NA	NA
Cadmium	mg/kg	0.48		mg/L	0.024	0.005	NA	0.002	0.001	RL	NA	RL	RL
Chromium	mg/kg		3.4	mg/L	0.17	0.1	NA	NA	NA	Yes	NA	NA	NA
Chromium (e)	mg/kg		3.4	mg/L	0.17	0.00035	NA	0.02	0.01	Yes	NA	Yes	Yes
Cobalt	mg/kg	0.9		mg/L	0.045	0.006	NA	NA	NA	RL	NA	NA	NA
Copper	mg/kg		2.5	mg/L	0.13	1.3	NA	0.01	0.01	No	NA	Yes	Yes
Iron	mg/kg		1060	mg/L	53	14	NA	NA	1	Yes	NA	NA	Yes
Lead	mg/kg	0.96		mg/L	0.048	0.015	NA	0.10	0.01	RL	NA	No	RL
Magnesium	mg/kg		2540	mg/L	127	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg		25.9	mg/L	1.30	0.43	0.1	NA	NA	Yes	Yes	NA	NA
Mercury	mg/kg		0.053	mg/L	0.0027	0.002	0.00015	0.001	0.001	Yes	Yes	Yes	Yes
Molybdenum	mg/kg	0.96		mg/L	0.048	0.1	NA	NA	NA	No	NA	NA	NA
Nickel	mg/kg		1.8	mg/L	0.090	0.39	4.6	0.47	0.05	No	No	No	Yes
Potassium	mg/kg		195	mg/L	9.75	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg		2.5	mg/L	0.13	0.05	4.2	NA	0.003	Yes	No	NA	Yes
Silver	mg/kg	0.48		mg/L	0.024	0.094	NA	0.003	NA	No	NA	RL	NA
Sodium	mg/kg	46.6	196	mg/L	9.8	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	mg/kg	0.9		mg/L	0.045	0.002	0.048	NA	NA	RL	No	NA	NA
Vanadium	mg/kg		2.8	mg/L	0.14	0.086	NA	NA	NA	Yes	NA	NA	NA
Zinc	mg/kg		10.8	mg/L	0.540	6	26	0.12	0.12	No	No	Yes	Yes
Other													
Acidity, Total	mg/kg	100		mg/L	5	NA	NA	NA	NA	NA	NA	NA	NA
Chloride	mg/kg	99.7	213	mg/L	10.7	250	NA	860	230	No	NA	No	No
Fluoride	mg/kg		76.9	mg/L	3.85	0.8	NA	NA	NA	Yes	NA	NA	NA
Percent Moisture	%		23.4	%	NA	NA	NA	NA	NA	NA	NA	NA	NA
pH at 25 Degrees C	Std. Units		8.3	Std. Units	NA	NA	NA	NA	6.5-9	NA	NA	NA	NA
Sulfate	mg/kg		19100	mg/L	955	250	NA	NA	NA	Yes	NA	NA	NA
Sulfide	mg/kg	50		mg/L	2.5	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	mg/kg	675	764	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mean Total Organic Carbon	mg/kg	673	712	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

CCR - Coal Combustion Residuals.
CCC - Continuous Criterion Concentration.
DW - Drinking Water.
Eco - Ecological.
IDEM - Indiana Department of Environmental Management.
HH - Human Health.
HLSC - Human Life-Cycle Safe Concentration.
Max. - Maximum Detected Concentration.
mg/L - milligram per liter.
MPL - Maximum Permissible Level.
NA - Not Available/Not Applicable.
NRWQC - National Recommended Water Quality Criteria.
RL - Reporting Limit.
RSL - Risk Based Screening Level.
SL - Screening Level.
SW - Surface Water.
USEPA - United States Environmental Protection Agency.

- Concentration is below screening level.
- Concentration is above screening level.
- Reporting limit is above screening level.

(a) - Leaching potential value is estimated as the maximum detected concentration or reporting limit for solids divided by 20.
(b) - The hierarchy for selection among the Human Health Screening Levels for Drinking Water, as shown in Table 7-2, is:
1) IDEM Groundwater Tap Residential.
2) IDEM MPL.
3) USEPA RSL - Tap Water.
(c) - The hierarchy for selection among the Human Health Screening Levels for Surface Water - Consumption of Organism Only, as shown in Table 7-2, is:
1) IDEM CCC HLSC - Consumption of Organism Only (proposed).
2) IDEM CCC HLSC - Consumption of Organism Only (current).
3) USEPA NRWQC - Consumption of Organism Only.
(d) - The hierarchy for the selection of ecological screening levels, as shown in Table 7-3, is:
1) IDEM Aquatic Life Criterion (proposed).
2) IDEM Aquatic Life Criterion (current).
3) USEPA NRWQC. Aquatic Life Criteria - Freshwater.
(e) - Chromium screened as both Total Chromium and Hexavalent Chromium to be conservative.